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The Oil and Gas Journal

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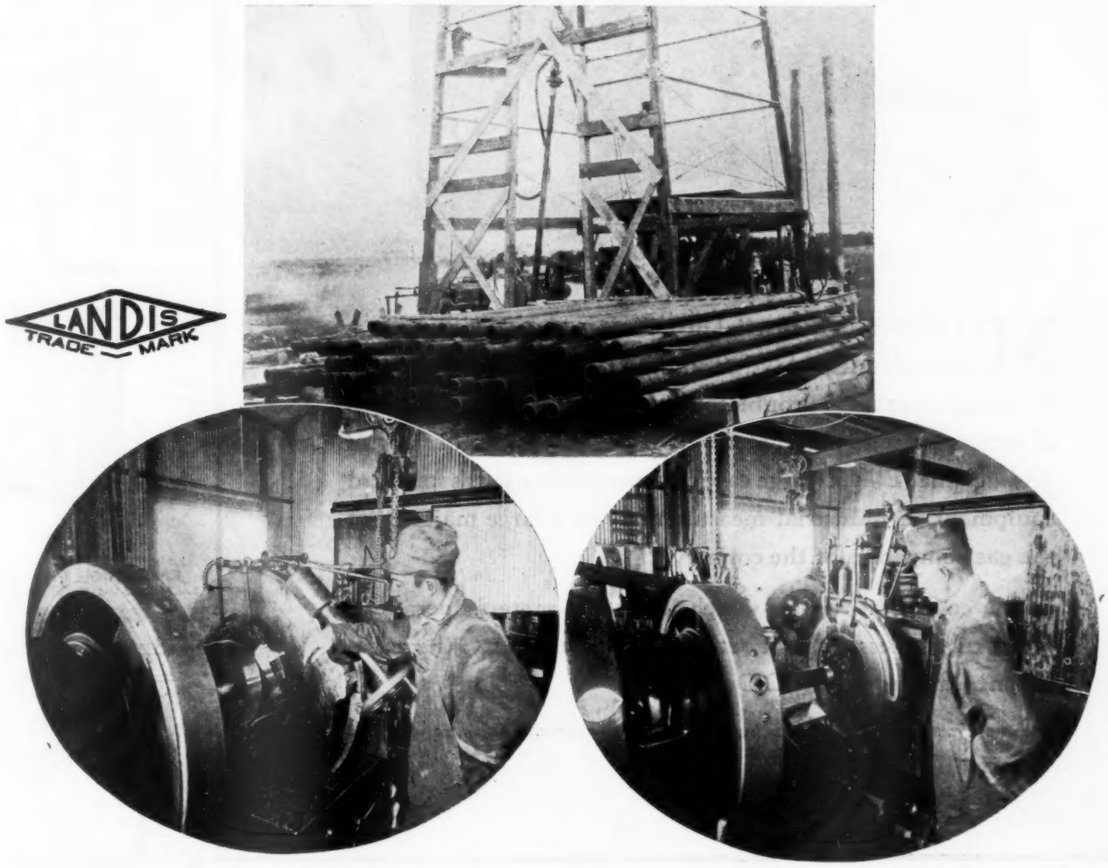

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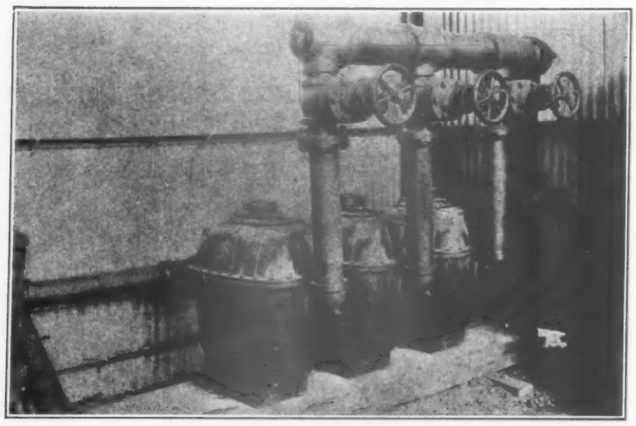

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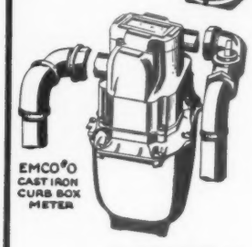

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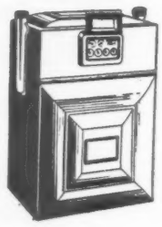

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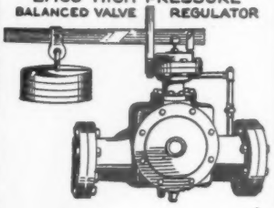

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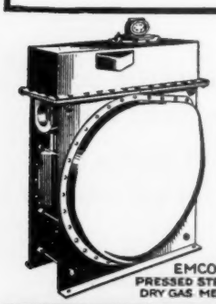

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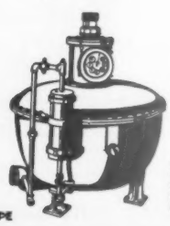

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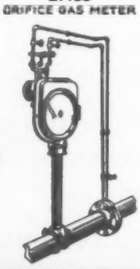

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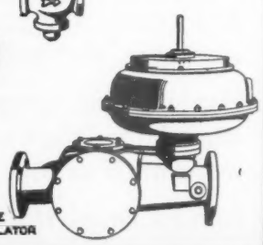

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The improved McCord Class "LD" Positive Force Feed Lubricator incorporates important improvements. Built for oil field use, it inherits the reputation of "Standard of the Oil Fields" from the well known McCord Class "B" Lubricator, more of which are in use in the oil field than all other makes combined.

Specify a McCord "LD" for your compressors. Replace the present lubricator with a dependable McCord "LD". One shutdown, the result of faulty lubrication, will pay the cost of a McCord installation many times over

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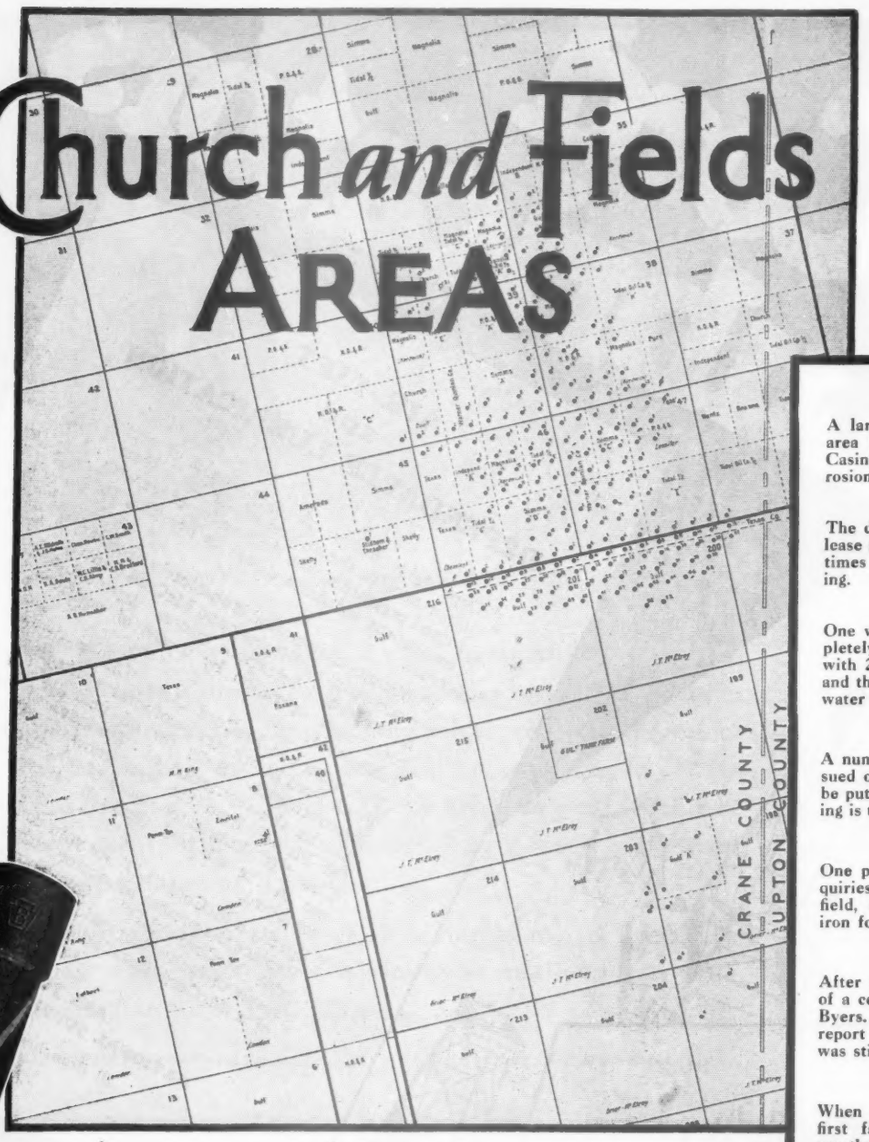
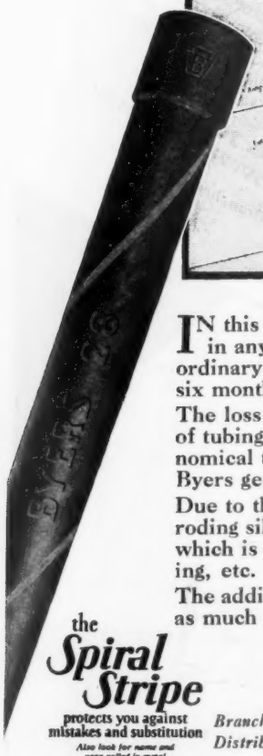




IN this important oil pool, sulphide concentration is probably higher than in any other oil field area in the world. Here can be found cases where ordinary tubing has shown a life of but a few weeks, and failures within six months are most common.

The loss of production incidental to shutting down a well for replacement of tubing, and the high cost of replacing at frequent intervals, makes it economical to use a better, though somewhat more expensive, material, such as Byers genuine wrought iron.

Due to the chemical purity of its base metal, and to its content of non-corroding siliceous slag, wrought iron shows an inherent resistance to corrosion which is of importance in fields having an adverse influence on tubing, casing, etc.

The additional life given by Byers Galvanized Wrought Iron Tubing is often as much as 100% to 300%, as compared with other makes of tubing.

A large number of pumping wells in this area have been using Byers Tubing and Casing for over three years without a corrosion failure.

* * * *

The district superintendent of a prominent lease reports getting from wrought iron five times the life received from ordinary tubing.

* * * *

One well showed ordinary 4" tubing completely eaten up within 31 days, compared with 2½" wrought iron in service 90 days and then used for line pipe. (Well making water and produced by air.)

* * * *

A number of field superintendents have issued orders that if any of the wells are to be put on air, galvanized wrought iron tubing is to be used immediately.

* * * *

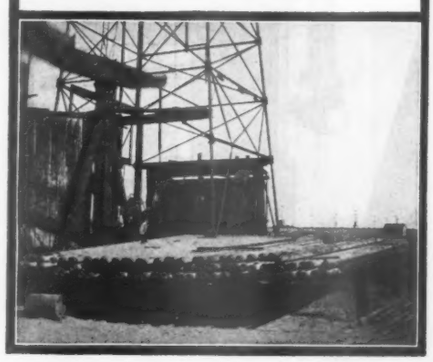
One prominent producer, after making inquiries among the other companies in this field, decided to use galvanized wrought iron for all future requirements.

* * * *

After trying cheaper tubing in nine wells of a certain lease, it was all replaced with Byers. Nine months later, when the last report was received, all of the wrought iron was still in very good condition.

* * * *

When another make of tubing showed its first failure in a pumping well after 4 months' time it was replaced after 6 months with Byers. No trouble has been experienced to date, the wrought iron having been in the well approximately 11 months and being still in good condition.



the *Spiral Stripe*
protects you against mistakes and substitution
Also look for name and year rolled in metal

A. M. BYERS COMPANY, Pittsburgh, Pa.
Established 1864

Branch Offices: HOUSTON DALLAS LOS ANGELES SAN ANTONIO TULSA
Distributors: International Supply Co., Jarecki Manufacturing Co., Oil Well Supply Co.

BYERS *Galvanized* TUBING

GENUINE WROUGHT IRON

Nye Bit Brace Reamer

Reams from ⅜ to 1¼ inches inclusive.
NET PRICE $1.17
ABSOLUTELY GUARANTEED

Nye (Toledo Type) Chasers Fit Nos. 1, 1A and 2 Nye (Toledo Type) Stocks

Each set is guaranteed in every particular. Will cut much easier than other similar dies.

No. 1, 1" to 1½"	$ .75 per set net
No. 1, 2"	1.25 per set net
No. 2, 2½" to 4"	3.60 per set net

Nye thin blade cutter wheel, made to fit all standard makes of pipe cutters, and guaranteed against breakage in use. Made both in smooth and knurled edge.

Nye Saunders Pattern Pipe Cutter

The Nye Saunders type pipe cutter is equipped with Nye knurled wheels. All parts are interchangeable.

No. 1	$ 2.00 net
No. 2	3.00 net
No. 3	7.33 net
No. 4	12.00 net
No. 5	18.67 net

A LETTER FROM HARRY G. NYE

TO THE OIL MEN OF THE U. S. A.

Fellow Citizens:

Life is like an automobile, and to run it a man has to put in oil, water, gas and air. Some men leave out the oil, and make enemies. Some leave out the water, and ruin their engine. Some leave out the gas, and get nowhere. Some leave out the air, and complain what a rough road life is.

By life I mean business life especially. Every man who comes into contact with the public needs to use oil, grease, and a little salve. The man who quarrels with his customers seldom gains his point, and often loses his trade. If you want to fight, challenge Jack Dempsey. It is the only kind of fighting that pays.

And by water I mean to keep cool in another way. The engine of a car and the body of a man will stand about so much, and no more. It won't be enough to belong to your union or your association. Join the Elks, or the Y.M.C.A., or the National Geographic Society, or something. Have some other interest in life besides bank interest.

But that doesn't mean that idling your engine forever will ever get you anywhere. If you have a business or a trade, give it the gas! The man who just takes what comes, gets what's left. The man who gets the best, gives his best. I never knew a shop so good that it couldn't be improved, or a business so big that it couldn't be increased.

And this is no age of the flat tire. There are plenty of things that take the bumps out of life besides air. Naturally, being a tool manufacturer, I put good tools first. Nye Tools are the pneumatic tires of the oil business. They make riding easy, and speed possible. They take the bumps out of this business.

Oil, water, gas and air are great things, but the greatest of these is all of them. No three are much good without the other. Make good friends, have a good time, do good work, and do it with good tools. Good friends, good times, good work, these are your business. Good tools, that's our business. Ask to see some Nye Tools.

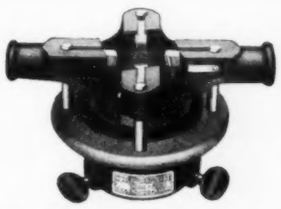
Yours for good.
HARRY G. NYE.

Copyright, 1928, by HARRY G. NYE
All Rights Reserved

Otherwise Known as
THE NYE TOOL & MACHINE WORKS
4120-30 Fullerton Ave., Chicago, Ill.

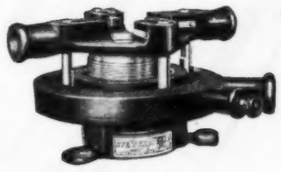
Nye Drop Forged Pipe Cutter

No. 1-A Complete	$2.75 net
No. 2-A Complete	3.30 net
No. 3-A Complete	5.50 net



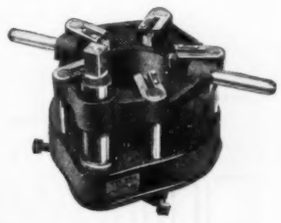
The rugged construction and few working parts account for the simplicity and durability of these Nye Receding models. They do the work easily and efficiently.

No. 1 Nye Receding Pipe Threader, complete ..... $9.60 net
West of Rocky Mountains $10.80



The No. 1A is the same as the No. 1 except that it is equipped with a ratchet for work where space is restricted.

No. 1A Nye Receding Pipe Threader, complete ..... $12.00 net
West of Rocky Mountains $13.50



Nye No. 2 (Toledo Type) Geared Threading Device Improved

Capacity 2½ in. to 4 in. inclusive.
Net price complete $50.00
West of Rocky Mountains $5.00
FREE TRIAL—ABSOLUTELY GUARANTEED

Nye Three-Wheel Pipe Cutter, Barnes Type

Equipped with Three Nye Knurled Cutter Wheels

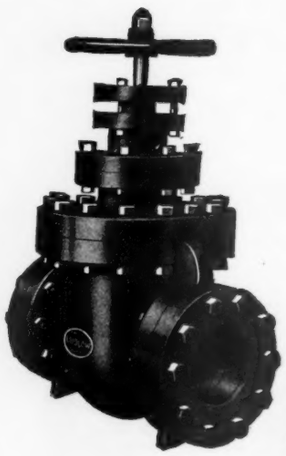
No. 1	$ 2.48 net
No. 2	3.30 net
No. 3	5.50 net
No. 4	11.00 net
No. 5	16.50 net
No. 6	22.00 net

LUDLOW announces

IRON BODY
BRONZE MOUNTED
ALL IRON
CAST STEEL
VALVES

—ALL SIZES AND PRESSURES—

FOR Refinery Pipe Line Drilling AND Hand Cylinder Electrical OPERATED



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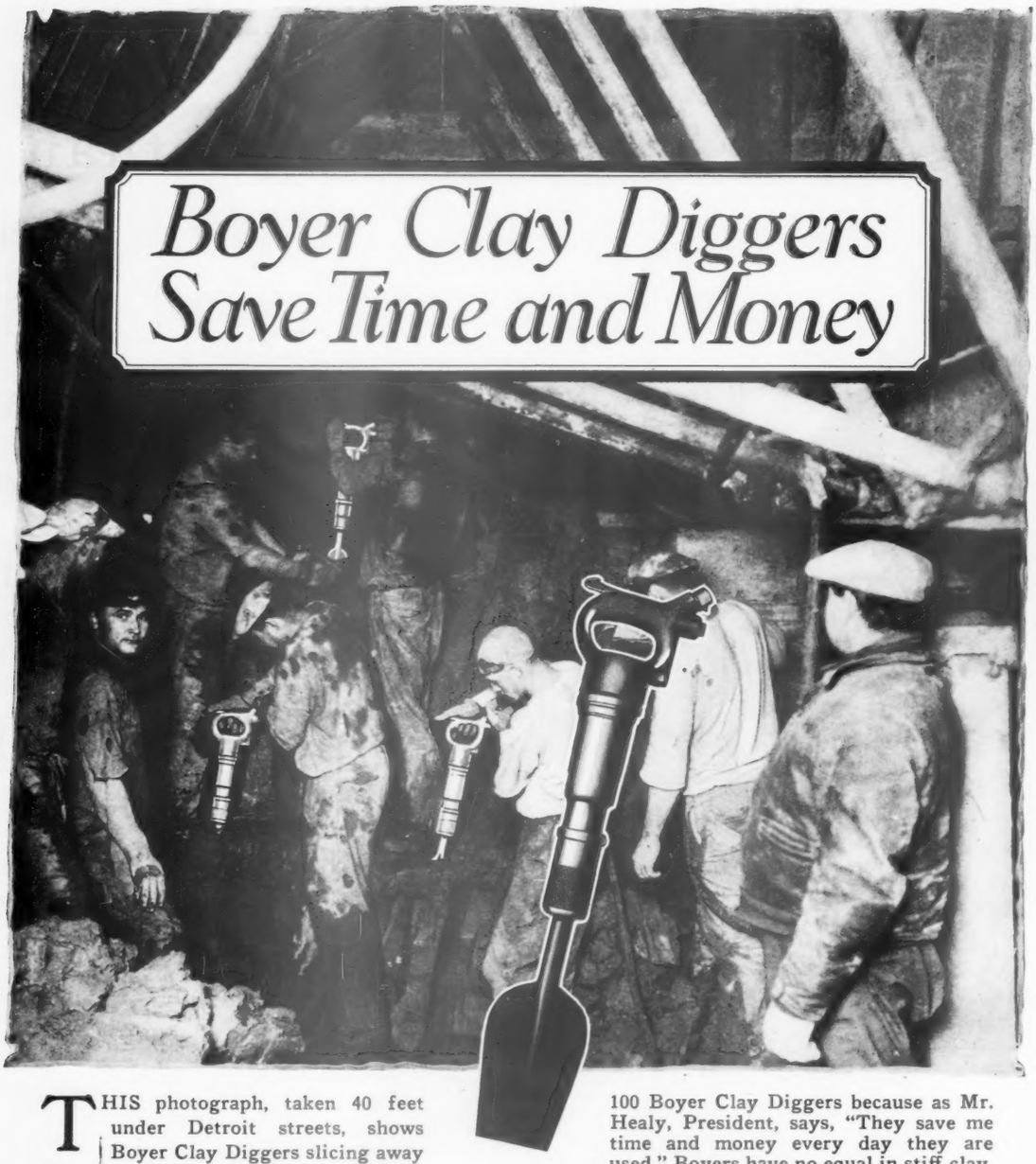

THIS photograph, taken 40 feet under Detroit streets, shows Boyer Clay Diggers slicing away clay THREE TIMES FASTER than could be done with hand picks. The S. A. Healy Company, the contractor on this Franklin Intercepter Sewer, has nearly 100 Boyer Clay Diggers because as Mr. Healy, President, says, "They save me time and money every day they are used." Boyers have no equal in stiff clay, hard sand or gravel. They weigh but 26 pounds complete and strike 3000 powerful blows per minute. If you're not using Boyers, you're losing money.

Illustrated and described in Catalog 561 sent on request

Chicago Pneumatic Tool Company

Sales and Service Branches all over the World

P-297

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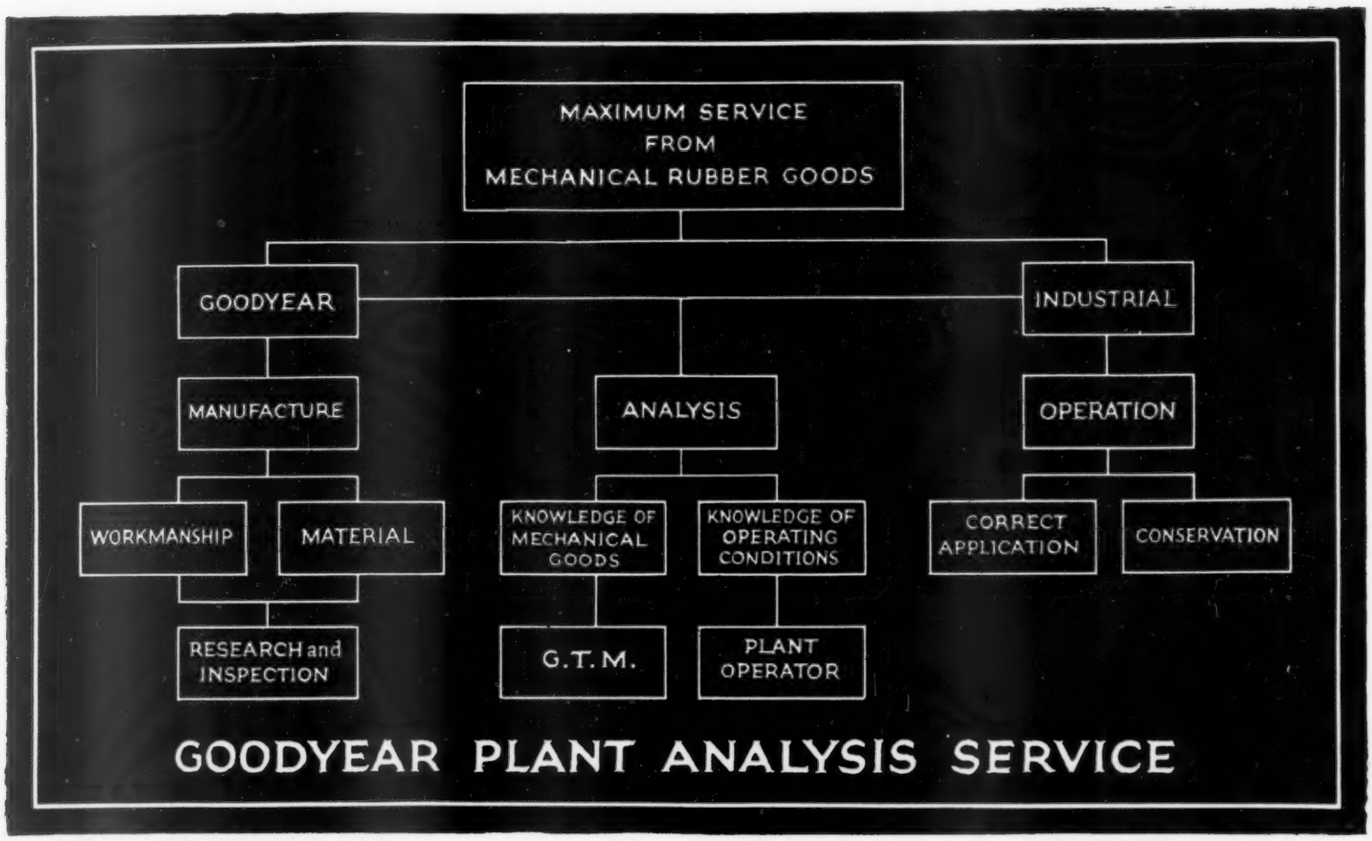

This charts the orderly relation of the Goodyear Plant Analysis Plan for maximum service from mechanical rubber goods

Copyright 1929, by The Goodyear Tire & Rubber Co., Inc.

The Plant Analysis Plan—and the G. T. M.

This chart is valuable to every man who has to deal with belting, hose or packing problems. It shows the principal factors in the Goodyear Plant Analysis Plan, and makes clear the part that is played in more efficient, economical plant equipment by the G. T. M.—Goodyear Technical Man.

You know the idea behind the Goodyear Analysis Service. It is simply this, that you are bound to get more work and better work, done more efficiently and more economically, from the *right* mechanical rubber goods, specified to the job. How the *right* product is found by analysis is shown on this chart.

Here you see the G. T. M. and your plant operator, each applying his special experience and knowledge to the problem in hand, whether it be a single drive or an entire plant equipment. They make the analysis together.

The G. T. M. is an expert on mechanical rubber goods. He knows their special properties. He is trained in the science of their specification and application. His work takes him into many plants, in many industries, so that he is familiar with most transmission and conveying problems, and is a practical authority on many of them.

When he comes to your plant, he comes as a friendly analyst of your operating problems, your troubles, maybe. He doesn't pretend to know it all. He gladly takes the advice of your superintendent and engineer. He gives close attention to their experienced knowledge of your operating conditions.

His entire purpose is to fit what he knows about belting, hose or packing to the demonstrated conditions of service in your plant. If he can find out what you can use to best advantage, he will recommend it to you. Then, on your order, Goodyear will build your equipment according to those approved specifications. And after it is installed, the G. T. M. will follow it up with a service that will see that you get out of your equipment all the value built into it by this scientific analysis and careful manufacture.

Doesn't it stand to reason that you are likely to get the utmost in trouble-free, long-wearing service out of that kind of equipment? The proof of the Goodyear Analysis Plan is in the records—many of them published in these pages during the past twelve years—of better, more productive and more economical work done by G. T. M.-specified goods in hundreds of plants, in every line of industry.

There is a G. T. M. in your neighborhood. It may pay you well to have him analyze your needs or problems. If you want to get in touch with him or receive detailed information about the service Goodyear Mechanical Rubber Goods—belts, hose, molded goods, packing—are giving in your particular industry, write to Goodyear, Akron, Ohio, or Los Angeles, California.

The Greatest Name in Rubber

BELTS · MOLDED GOODS · HOSE · PACKING

GOODYEAR

1,420,000 *Horsepower*

OUT to the far corners of the earth the exhausts of Bessemer's million four hundred and twenty thousand horsepower have sounded their "Song of Service". Into the teeth of the four winds they have hurled their challenge to Time, Wear and Abuse.

For thirty years Bessemers have been building a reputation of performance surpassed by none. During these thirty years this vast array of Bessemer horsepower has consistently *proved* its right to leadership—in engineering, in construction and in serviceability.

Get the most out of *your* oil field power equipment dollars by buying Bessemers—proved by a million four hundred and twenty thousand horsepower.

BESSEMER ENGINE COMPANY
York Street ∴ Grove City, Pa.

BESSEMER

For assured Results

Elliott Core Drill

Elliott Core Drills have pioneered the coring of oil wells. They have recovered perfect cores of practically every formation throughout the oil fields of the world with uniform success. For assured results you can depend upon this time tested and proven core drilling equipment. Complete data and information on request.

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One of the NEW Heavy-Duty models. International trucks are now better than ever before. See the 1929 line, just released, now on advance exhibit at the Branch or International Truck dealer near you.

International Trucks —
for Every Hauling Job *in the* Oil Business

SEE and try International trucks and put them to work on your hauling. Get acquainted with the sturdy, practical construction . . . take a turn at the wheel and find out what it means to drive a truck that's a quality truck in every respect.

Internationals are powered with vibrationless, self-contained, accessible, easily-serviced engines that develop greater pulling ability at low engine speed. The engines are of unit construction, cushion mounted. Clutch has vibration damper. Steering gear of the famous "Steer-Easy" International design, with a tilted wheel that makes driving practically effortless.

International Heavy-Duty Trucks are obtainable in 2½, 3½, and 5-ton capacities with double reduction or chain drive. They are supplemented by a full line of International Speed Trucks, 4 and 6-cylinder, 1¼, 1½, and 2-ton sizes, also the ¾-ton Special Delivery and the Six-Speed Special. Write for specific information on any type of truck. Address —

INTERNATIONAL

Your investment in International trucks is augmented by service rendered through 168 Company-owned branches located in the United States and Canada.

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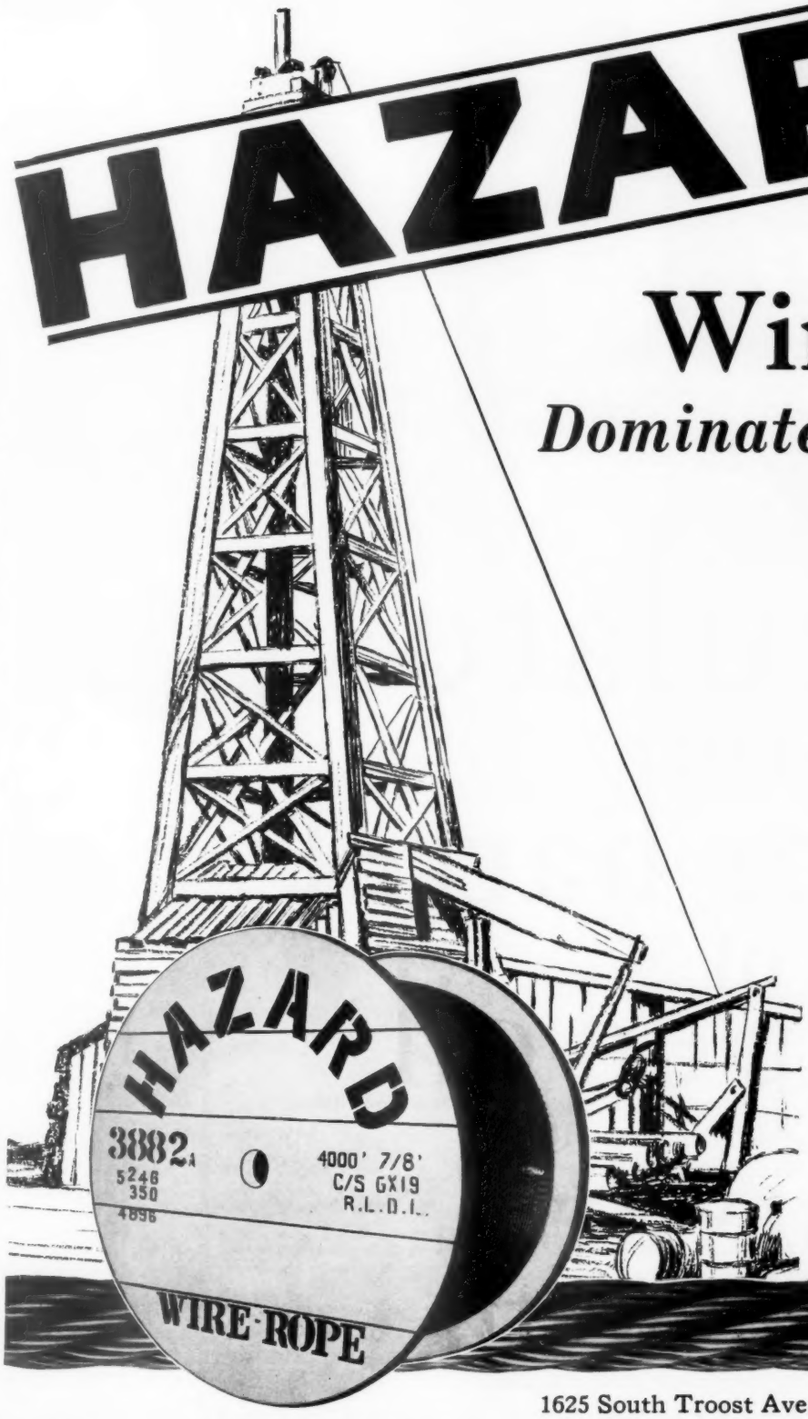
The new International line offers the essential triple combination of greater hauling power, speed, and the ability to stop quickly. All models are now equipped with internal expanding 4-wheel brakes.

INTERNATIONAL HARVESTER COMPANY
606 So. Michigan Ave. OF AMERICA (Incorporated) Chicago, Illinois

HAZARD

Wire Lines
Dominate in the Oil Country



EVERY Hazard Oil Line has a reputation to maintain as the line that dominates in the oil country through its ability to cut costs and stand up under the punishment of deep drilling operations.

Endless care in manufacture safeguards this reputation before the line reaches the field. Every operation, from the selection of the steel to the final closing of the rope, is carefully checked and tested to make certain that each Hazard line gives dependable low cost service for every oil field requirement.

If you are looking for a way to lower wire rope costs, try a Hazard line and compare results. Send now for full particulars concerning the complete line of Hazard wire ropes for oil country usage.

Immediate deliveries from branches and distributors listed.

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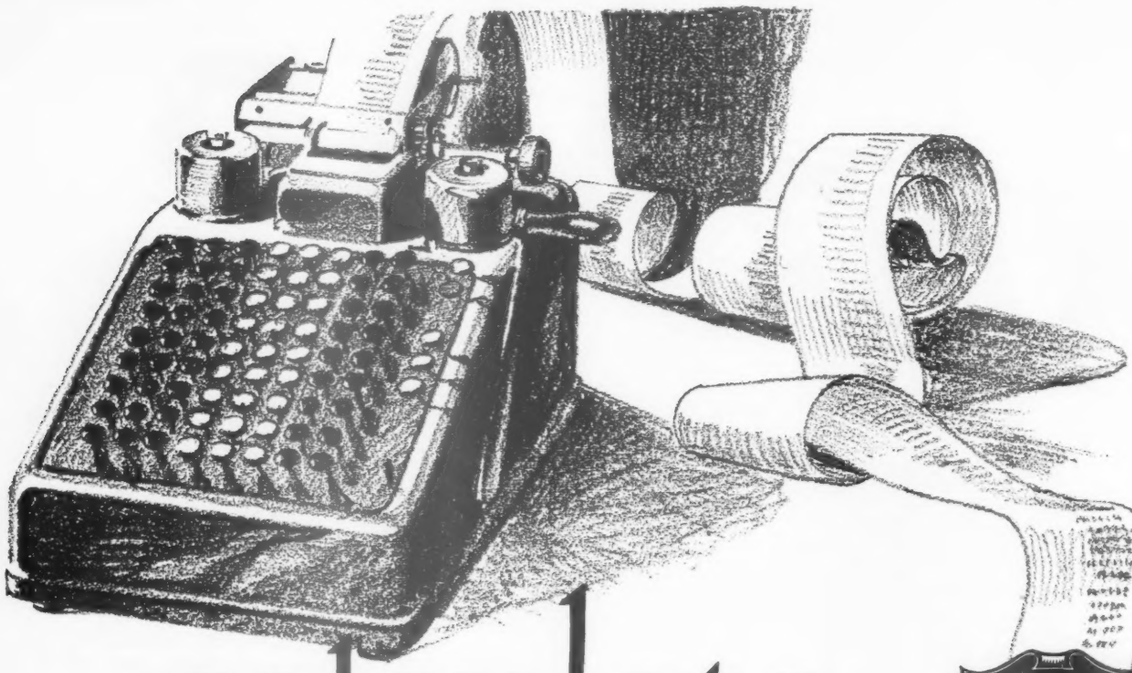

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Axelson Pumps

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THESE *NEW* IDEAS make a BETTER VISE

Williams' *New* "Vulcan Superior" beats any pipe vise on the market for convenience, speed and long life. It embodies two new ideas in Chain Pipe Vise construction—

1. "Overhead" adjustment—the handle is up ON TOP where it's easy to operate.
2. Reversible jaws—for longer life. When the teeth first in use wear, simply unscrew the bolts and turn the jaws over.

These valuable features are found ONLY in Williams' "Vulcan Superior"—they're patented.

You need this better vise in your work. Get it today. Literature on request.

J. H. WILLIAMS & CO.
"The Drop-Forging People"
New York BUFFALO Chicago

CHROME-PLATED FINISH

Two Sizes:
No. 11 for ⅛ to 2½" pipe.
No. 12 for ¼ to 4½" pipe.
½" larger capacity in each case than other chain pipe vises.

WHOLLY MADE OF WROUGHT STEEL

FULLY GUARANTEED

WILLIAMS
SUPERIOR DROP-FORGED TOOLS
"VULCAN" SUPERIOR
CHAIN PIPE VISE

A Special THREAD Protector

for "NATIONAL" OIL COUNTRY TUBULAR GOODS

STUDY THESE 5 FEATURES

1 Rings and nipples are taper-threaded to fit all sizes and classes of material.

2 Total length of pipe thread "A" is protected, as well as that portion of coupling thread "B" which engages with pipe thread.

3 Form of rings and nipples are such as to provide maximum strength for weight of ring and nipple.

4 Ends of pipe and couplings as well as threads are fully protected.

5 There is no additional cost for this special protection.

IN unloading and transporting pipe to the derrick, where threads are always exposed to a certain amount of damage, thread protection is especially desirable. It is of no less value, however, for the long hauls by rail into the Mid-Continent, Gulf Coast and California fields. A high class product, such as "NATIONAL" Oil Country Tubular Goods, deserves the best protection available, but in order that material may reach the derrick in the same condition as when it is loaded for shipment at the mill, careful methods of handling cannot be discarded. Thread protection is another evidence of "NATIONAL" Service which has made "NATIONAL" products—The Standard of America's Oil Fields.

NATIONAL TUBE COMPANY · Pittsburgh, Pa.

Subsidiary of United States Steel Corporation

IT HAS BEEN SAID:

EXPERTO CREDE*

"A Stitch in Time Saves Nine"

Mettler Gas Burners installed in your boilers and stills now will not only save you from wasting any more money on fire brick and boiler tubes, but they will also reduce your gas bill. Did you ever figure out what a measly 2% reduction of your gas consumption would amount to in a year's time? Do it—and you will be surprised.

Usually the saving effected by Mettler Burners is sufficient to pay the entire cost of their installation in less than six months, and that's what we would call "a darned good investment."

Mettler Burners are best and now is the time to buy them.

METTLER GAS BURNERS HAVE NEVER BEEN SUCCESSFULLY IMITATED

We Solicit an Opportunity to Serve

*Trust One Who Has Had Experience.

LEE B.
METTLER CO.
406 So. Main St.
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Please quote Prices on the equipment for the following:

No. of Boilers.....
H. P...... **Make**.....
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Size..... **Type**.....
Name.....
Company.....
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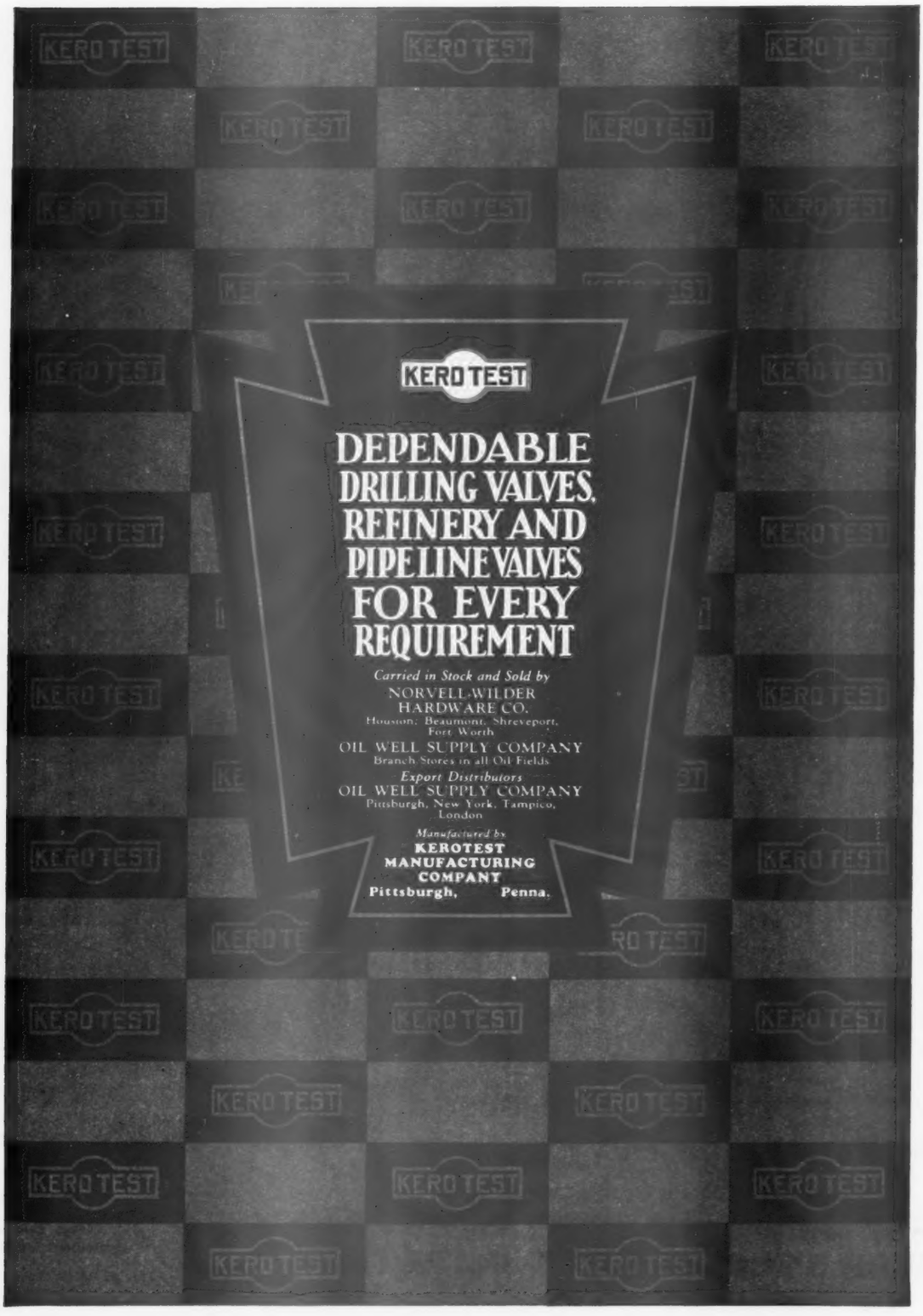
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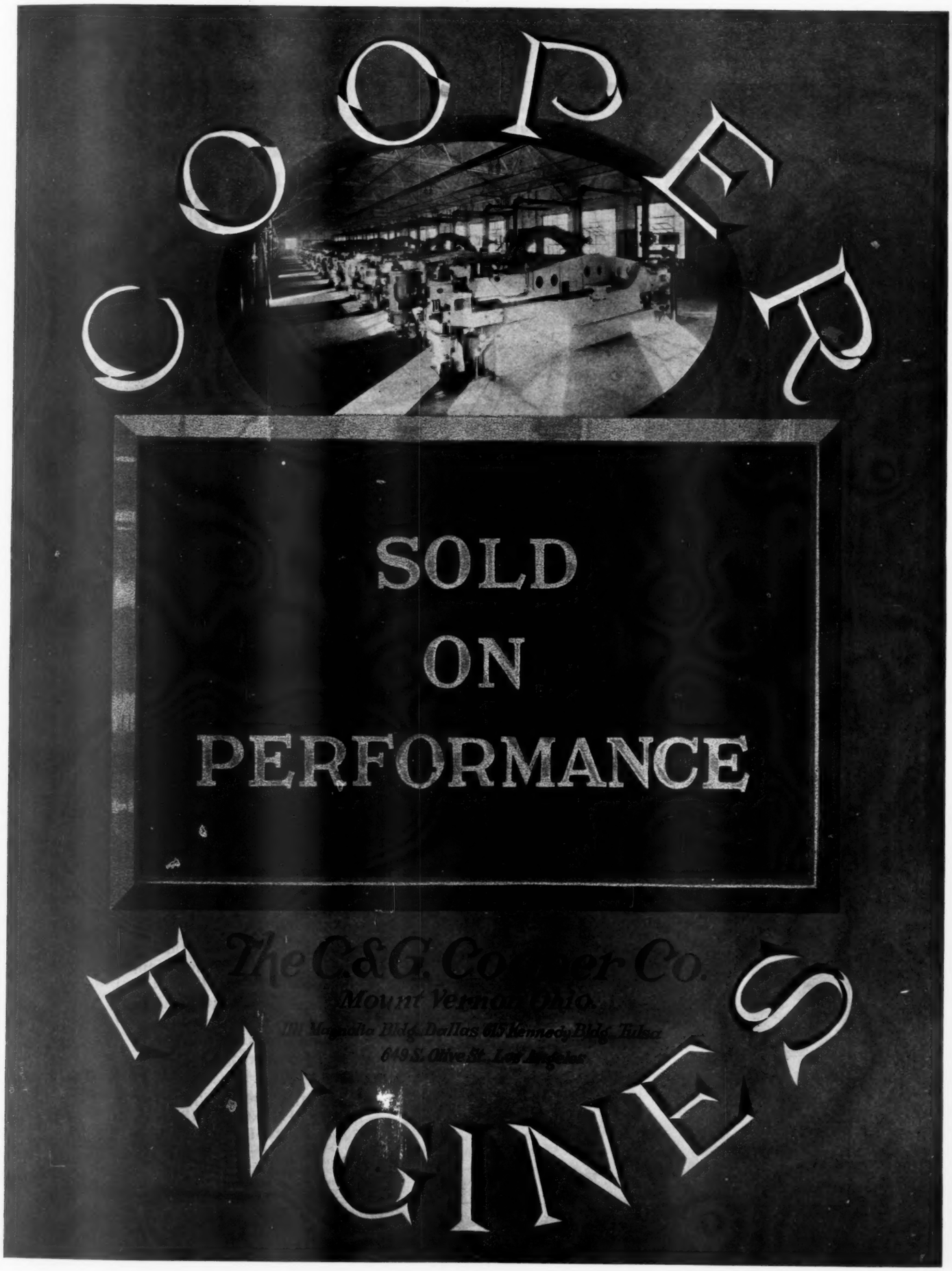
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DUE to huge production of Oceco Conservation Vent Units for shipment all over the world, we are able to produce and sell them for even less than imitations that are still far from delivering Oceco protection.

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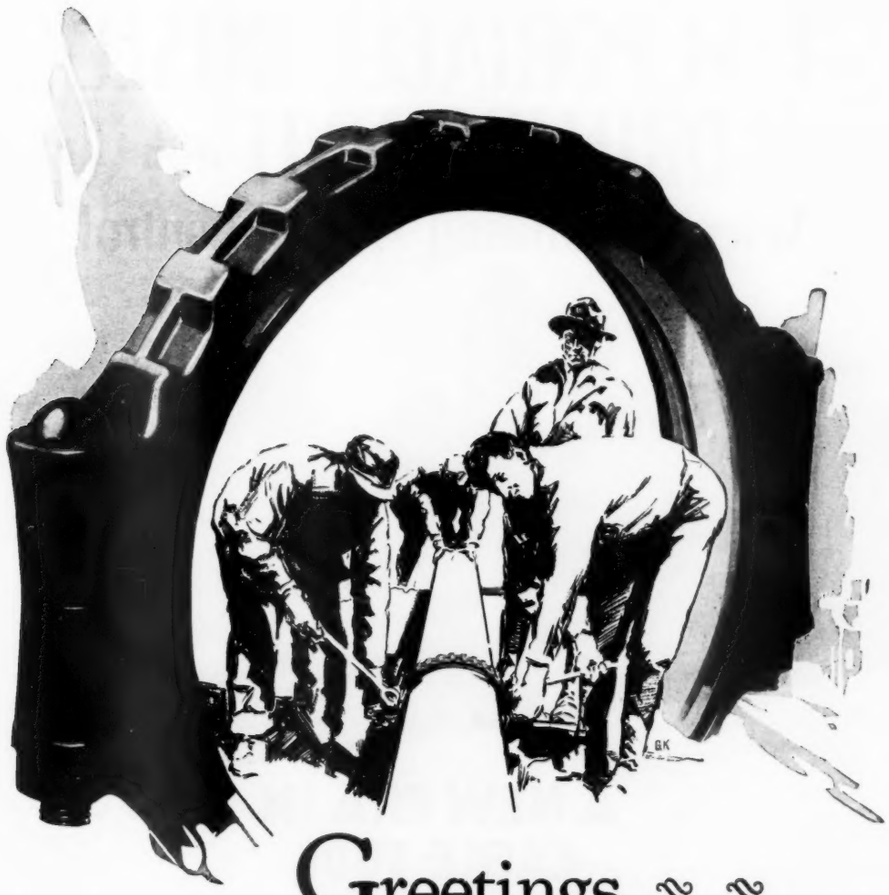
Tulsa Trust Bldg., Tulsa, Okla.
Neilan, Schumacher & Co., Los Angeles, Cal.



Greetings
and Best Wishes
for the New Year

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26 Broadway, New York

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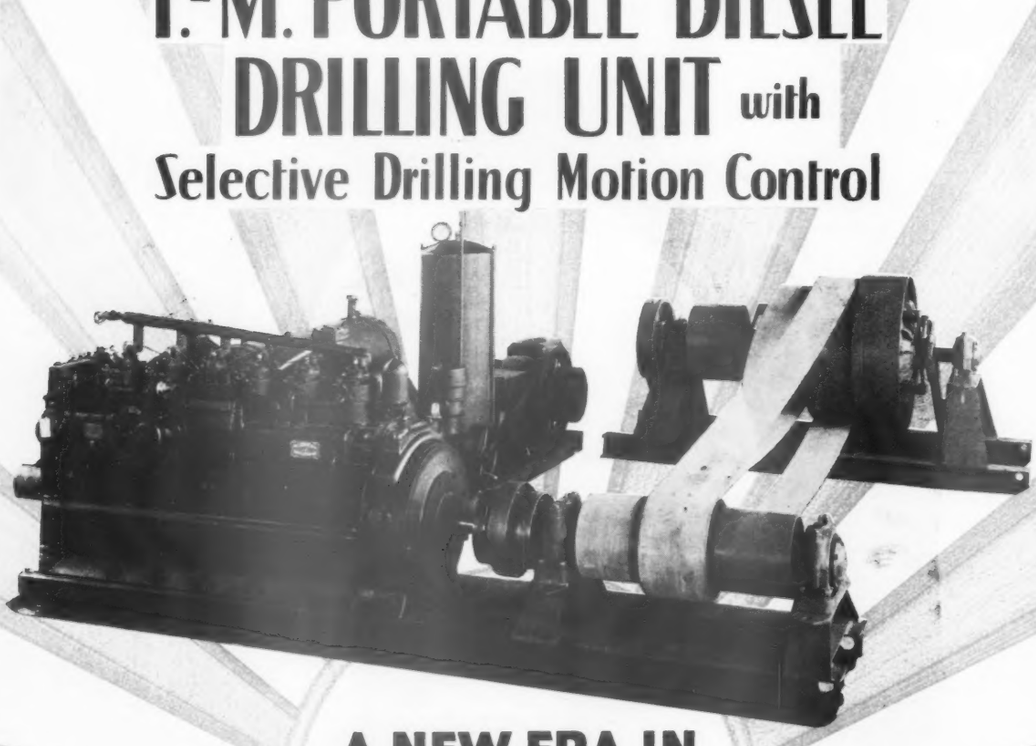
F-M. PORTABLE DIESEL DRILLING UNIT with Selective Drilling Motion Control



A NEW ERA IN CABLE TOOL DRILLING!

The FAIRBANKS-MORSE Portable Diesel Drilling Unit has inaugurated a new era in cable tool drilling by making possible hitherto unknown economy, speed and convenience.

This unit introduces the amazing fuel economy of full Diesel engine combined with a perfect drilling motion obtained through an ingenious Selective Drilling Motion Control which enables the operator instantly to vary the motion to suit varying drilling conditions.

The F-M Diesel Drilling Engine has plenty of power and flexibility for handling all drilling operations. Made in 4 and 6 cylinder sizes, direct connected to a 2-speed Drilling Countershaft, gearless, reversible, with air-cooled disc clutches, Timken tapered roller bearings, and independent neutral brake. Ask about the remarkable performance records being made by this unit in different states.

"If CONTINENTAL Sells It, There Is No Better"

THE CONTINENTAL SUPPLY COMPANY
General Offices: St. Louis
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THE CONTINENTAL SUPPLY COMPANY, Ltd.
411 Lancaster Bldg., Calgary, Alberta, Canada

CONTINENTAL

Flush Areas Boost Crude Production

Highest daily average estimated total production in 1927, week ended July 30, 2,587,105 bbls. Lowest in 1927, Jan. 22, 2,360,789 bbls.

Conservation Movement Is Making Good Progress as Increased Output Emphasizes Need for Restrictions

By Andrew M. Rowley

Highest daily average estimated light oil production in 1927, week ended Dec. 29, 2,158,134 bbls. Lowest in 1927, Jan. 1, 1,790,729 bbls.

Two factors of real importance stand out in the developments of the past week affecting the crude oil situation. One is the substantial increase registered in production in Oklahoma and California resulting from development of flush areas and newly discovered productive sections. The other is the apparent progress being made by the industry itself to achieve conservation and the definite movement now being carried on to secure state co-operation in these efforts through the enactment of appropriate legislation giving the majority in the petroleum industry the right and power to prevent uneconomic drilling and development which would result in a further overproduction of crude oil.

The increase in output of crude oil at this season of the year is important because the oil is not needed above ground at this time and also because it indicates what the industry may expect if proven and prospective areas are to be developed without restrictions. The production of crude oil, already too great for market requirements, could be further increased quite materially were no restrictions placed on operations and output. The entire industry and the public is vitally concerned that such a condition be avoided. The small operator should be especially interested as his income, in most instances, comes solely from the sale of his crude oil and low prices affect him directly. The larger companies can, at times, make a profit from their refinery operations which serves to offset losses due to low crude oil prices. But the interest of the large and small operator in the maintenance of crude oil prices which will insure prosperity is identical.

There is practical unanimity of opinion throughout the petroleum industry now that conservation measures are necessary and that the industry can and will enjoy a merited period of prosperity if these efforts to keep crude oil production within market requirements are successful. There should be no delay in taking all proper steps to achieve this object as soon as possible.

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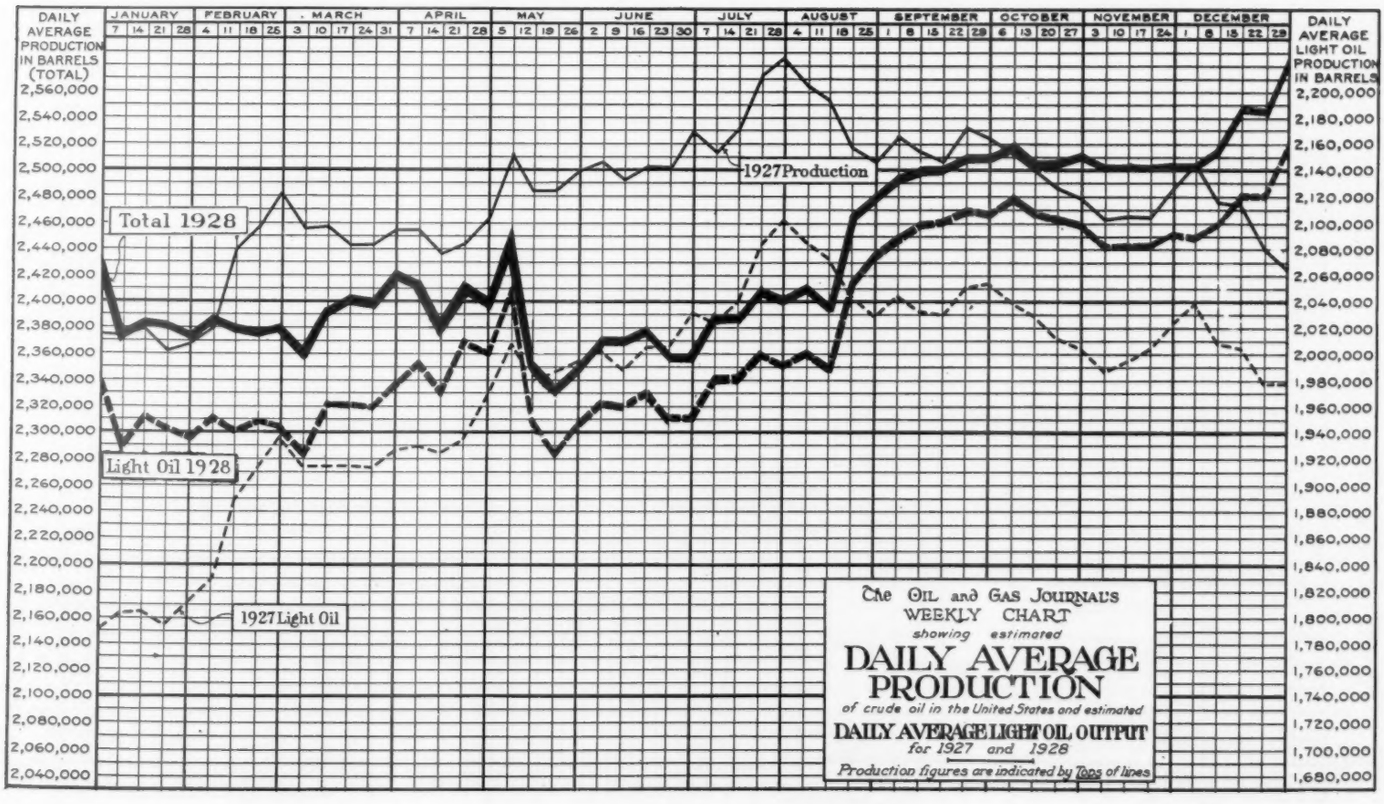
PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended December 29, and a comparison with the previous week follows:

	Dec. 29		Dec. 22	
	Light	Heavy	Light	Heavy
Oklahoma—				
Tonkawa	11,465	.....	11,535	.....
Burbank	24,085	.....	24,365	.....
Other Osage Fields	26,215	.....	25,880	.....
St. Louis-Pearson	138,270	.....	130,870	.....
Cushing and Shamrock	20,835	.....	20,790	.....
Bristow	19,640	.....	20,095	.....
Allen	27,955	.....	28,320	.....
Seminole	282,630	.....	274,530	.....
Northern Miscellaneous	113,270	.....	109,435	.....
Southern Fields	59,015	.....	59,145	.....
Total Oklahoma	723,380	.....	704,965	.....
West Texas—				
Hendricks	155,520	.....	153,546	.....
Yates	72,598	.....	71,326	.....
Remainder	117,542	.....	119,874	.....
Total West Texas	345,660	.....	344,746	.....
North Louisiana	31,035	6,000	30,975	6,050
Arkansas	27,715	52,320	27,195	52,800
North Central Texas	141,369	.....	140,797	.....
Texas Panhandle	58,695	.....	61,365	.....
East Central Texas	22,964	.....	23,033	.....
Kansas	98,145	.....	96,115	.....
Total Mid-Continent Area	1,448,963	58,320	1,429,191	58,850
Gulf Coast	.....	138,642	.....	133,973
Southwest Texas	.....	38,748	.....	39,048
Eastern	116,000	.....	113,250	.....
Rocky Mountain Area	73,671	.....	74,074	.....
California—				
Santa Fe Springs	110,000	.....	96,000	.....
Long Beach	185,000	.....	186,000	.....
Torrance	2,000	13,500	2,000	13,500
Huntington Beach	50,500	.....	50,500	.....
Elwood	15,000	.....	15,250	.....
Inglewood	16,500	11,000	16,500	11,000
Ventura Avenue	50,500	.....	51,000	.....
Seal Beach	29,000	.....	29,000	.....
Remainder of State	61,000	167,500	61,000	167,000
Total California	519,500	192,000	507,250	191,500
Total United States	2,158,134	427,710	2,123,765	423,371
Grand Total		2,585,844		2,547,136

→ **Total Increase, 38,708 Bbls.; Light Oil Increase, 34,369 Bbls.** ←



General Decline in Gasoline Market

Oklahoma Refinery Grades, Natural Gasolines and Blends in Sharp Decline. Gas Oils and Distillates Fractionally Higher

By C. O. Willson

Another general break in refinery gasolines and motor fuel blending materials was the unwanted development of the final week of 1928 in the Oklahoma (Group 3) market.

As the new year opened on Tuesday prices on all grades of refinery gasoline were from a quarter to a half cent lower than the week previous. In the blending materials the decline in refinery naphthas kept pace with the regular grades of gasolines. The continued decline in natural gasoline prices was featured with a drop of almost 1 cent in Grade AA, the principal grade manufactured in the Mid-Continent Field.

Among the other products, kerosene prices were fractionally lower and the lower gravity grades of fuel oil were steady. A steady demand for distillates and gas oil was reflected in an eighth of a cent advance in most of the grades. The zero grades were particularly strong and hard to find in Oklahoma for prompt shipment. The higher gravity fuels also shared in this improved demand and prices on the zero grades are from 2½ to 5 cents a barrel higher than they were a week ago.

Among the lubricants all grades of cylinder stocks are strong and the advances of last week were well maintained. There were no changes reported in neutral oils and wax.

The slump in gasoline prices came somewhat as a surprise. The last week of the year is generally dull so far as spot business is concerned and on the whole the domestic business in the Oklahoma market for the week was better than expected.

Competition Keen

Sellers, however, found that they had stiff competition in offering their gasoline to Middle West jobbers. North Louisiana and Arkansas refiners have joined with the Oklahoma, North Texas, West Texas and Kansas refiners in bidding for this business. The North Louisiana and Arkansas refiners have to a large extent maintained prices in their shipments to what is termed their "normal marketing territory." Their output of gasoline when compared to the rest of the Mid-Continent is relatively small and under normal conditions the intrastate business and that of the southeastern states where they are favored with lower freight rates, absorbs their available gasoline production.

Recently it has been apparent that surplus gasoline has accumulated at a few of the refineries located in those two refining areas and this material is now being offered freely to many jobber buyers in the states of the Middle West centering in the Chicago market. This has simply added to an already distress situation in the Mid-Continent market and the lower Oklahoma, Kansas, West Texas and North Texas prices are the result.

In Oklahoma a majority of the larger refiners on Monday dropped their price on 58-60 U. S. Motor gasoline to 8 cents, a decline of one-half cent under the general price of 8½ cents a week ago. Similar reductions were made in the higher gravity grades and naphtha. The 60-62 400 grade was available from these refiners at 8½ cents, and the 64-66 375 grade at 9 cents. These were prices to the trade. Some resale material for domestic shipment and export sales were reported from a quarter to a half cent under these prices.

Although the blend market is more active than usual, refiners also reduced their prices on naphtha. The 50-52 450 grade was available from several sources at 7½ cents. The fact that natural gasoline prices have also been reduced has resulted in greater activity in the "old-fashioned" blend business. When both naphtha and natural gasoline prices were high in relation to the regular grades of refinery gasoline the blenders were at a disadvantage, their product costing them more than their customers would pay. These blenders in Oklahoma are now in a position to offer the trade a high gravity low initial blend at a

(Continued on Page 141)

REFINED MARKET BAROMETER

Weakness in the gasoline market was apparent in all areas during the past week although prices were unchanged in California. Prices were lowered in the domestic market in the East Coast and Mid-Continent and in the Gulf Coastal area export prices on bulk shipments were reduced sharply as the old year closed. The gasoline price decline is due the fact that refiners in most instances are maintaining their summer basis of plant operation despite a seasonal decline in actual consumption of motor fuels. Natural gasoline prices were reduced from one-fourth to 1 cent a gallon in the Mid-Continent. Weakness in kerosene was general and prices were lowered slightly in several areas. Gas oils and the furnace oil grades of distillates generally are strong and prices steady or advancing. Fuel oil prices are steady, some improvement being reported in the sections where an over-supply has been flooding the market. Cylinder stocks again advanced in the eastern areas. There were no general changes in petroleum wax.

Mid-Continent—Prices on refinery gasolines, natural gasolines and blends lower in all areas. Continued sharp decline in the principal grades of natural gasoline. Kerosene prices fractionally lower in all areas. Gas oils and better grades of furnace oils strong except in North Louisiana and Arkansas where prices were lowered. Fuel oils unchanged. Cylinder stocks strong. Wax prices unchanged.

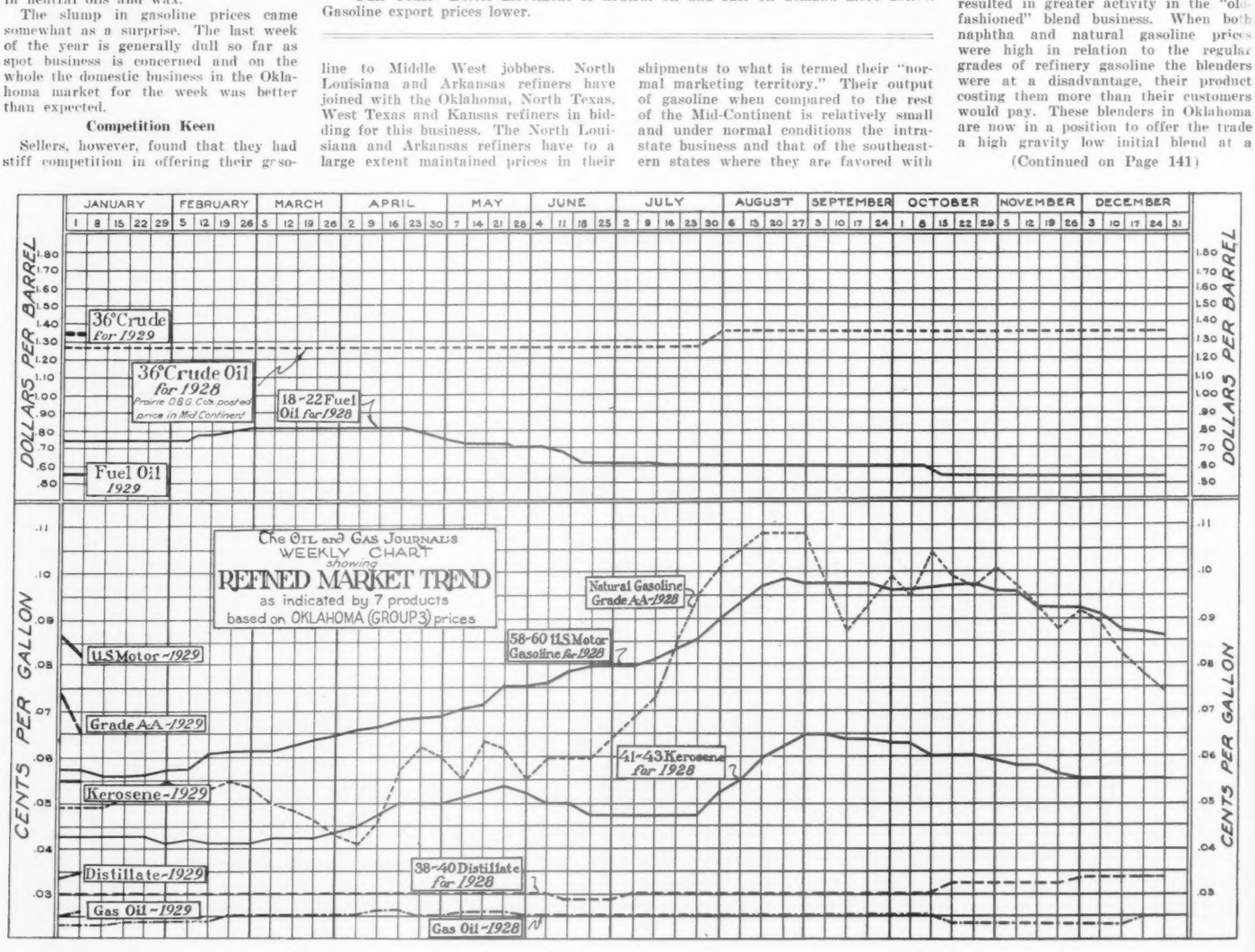
East Coast—Lubricating oils strongest product, additional price advances materializing in several grades of steam refined cylinder stocks and bright stocks. Coastal market on U. S. Motor gasoline reduced one-half cent, reflecting general weakness in both export and domestic market. Kerosene market slow. Refiners expect higher wax prices. Petrolatum sluggish. Fuel oil prices well maintained.

Chicago—Sharp decline in gasoline prices led by major refiners. Gasoline demand sluggish. Strong demand for low cold test fuels and distillates. Heavy fuel oils dull. Kerosene sluggish.

Pennsylvania—Cylinder stocks continue strong. Gasoline and kerosene movement slow.

California—Prices on several grades of red and pale neutral oils reduced. No other price changes.

Gulf Coast—Better movement of neutral oil and fuel oil demand more active. Gasoline export prices lower.



California Gasoline Market Unsettled

Expansion in Refining Threatens Present Market Price Structure. Crude Production Situation Shows Need of Conservative Operation

By L. P. Stockman

LOS ANGELES, Calif., Dec. 29.—The marketing situation on the Pacific Coast is rapidly approaching another crisis and unless extreme care is exercised it will result in a general price reduction which may ultimately extend throughout California, Washington and Oregon. The local market has been softening for several weeks due to competition on the part of several smaller refiners and the serious inroads made by bootleggers. Reports indicate that some of the major refiners have been forced to increase the re-seller's differential an additional cent in order to meet competition. The gentlemen's agreement which has been in effect for several months has stabilized prices in an abnormal market but there has been a decided weakening on the part of independent refiners recently due to smaller sales of refined oil incident to the winter season and the inability of some to cope with greatly increased production of crude oil at Santa Fe Springs.

Representatives of the larger companies are sponsoring a movement to stabilize conditions, but no definite assurance has yet come out of the several conferences already held. A number of independent dealers throughout Southern California are displaying signs offering six gallons of gasoline for 95 cents, including the State tax of 3 cents per gallon, notwithstanding the offer of some of the major companies to purchase surplus gasoline production of independent refiners at 10 cents per gallon in order to stabilize the market. Heretofore this price slashing has for the most part been limited to the territory adjacent to Los Angeles but within the past few days independents in the San Francisco bay region have cut gasoline 3 cents per gallon. This has created a rather complex situation as independent stations are retailing at 18 cents per gallon while the large companies are quoting 21 cents.

Many Small Retailers

One of the most interesting developments on the Pacific Coast from a marketing angle is the decision of the larger companies to withdraw from the service station business as far as possible. The Standard initiated this move a year or so ago with the result that it has leased out about 500 of its 750 stations to different individuals. The Union stepped out during the past month and leased practically its entire chain of stations to various service station operators, only a few being retained along the Pacific Coast. It is quite possible that the Associated, Shell and Richfield companies will follow a similar procedure in the near future in order to keep step with developments.

The advantages accruing to major refiners as a result of individual operation are quite obvious, especially in view of the fact that operators will make a special effort to increase sales since each additional gallon of gasoline sold means added revenues to the individual instead of reverting to the refiner. This added incentive has proven a powerful stimulant in many cases especially where marketers have subleased stations to men with initiative.

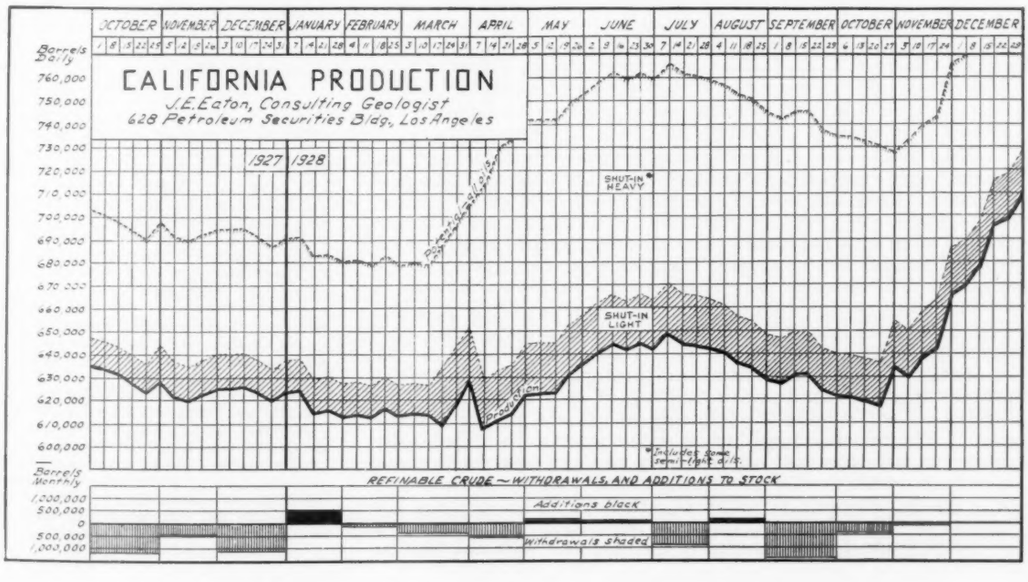
The General Petroleum Co. has never erected any service stations on the Pacific Coast, its products being marketed exclusively through individual re-sellers. This policy has proven very successful as the company has backed up its agents with a consistent advertising program. The Richfield Oil Co. has also catered to independent stations, although this concern also operates a limited number of service stations in various parts of California.

Although the leasing of company-owned service stations to individual operators has certain obvious advantages from a gallonage standpoint, this practice may revolutionize the marketing situation on the Pacific Coast unless steps are taken to prevent indiscriminate price cutting as a result of competition. Heretofore the major refiners have been able to stabilize prices to a certain extent because of their dominating influence through ownership of extensive chains of company operated stations. The situation at the present time, however, seems to have got beyond control of any organization as it is a case of every man for himself. California refiners are undoubtedly of the opinion that they will be able to stabilize prices of refined oils by regulating the differential to re-sellers and while this may work out in the long run it is doubtful if this method will have the desired effect during periods of overproduction and keen competition from independent refiners and unethical jobbers.

The differential to re-sellers is supposed to be 4 cents per gallon at the present time, but this margin varies to a considerable extent, depending upon existing conditions. The inability of refiners to stabilize prices has already become manifest as operators of stations leased from major refiners are not bound to maintain any set price. This freedom of action permits service station operators to sell below the market, notwithstanding the fact that company owened stations are quoting a different price. It is quite obvious that gasoline prices in any given area will fluctuate to a certain extent depending upon competitive conditions. It is apparently the intention of refiners to treat gasoline as a stable commodity and permit re-sellers to merchandise it along sound economic lines. Theoretically this practice is basically sound but in the face of keen competition prices must of necessity show considerable fluctuation.

GALLONAGE OF PRINCIPAL GASOLINE DISTRIBUTORS IN CALIFORNIA (Data given in thousands of gallons)

Company—	1927 First quarter Total gallons	1927 Second quarter Total gallons	1927 Third quarter Total gallons	1927 Fourth quarter Total gallons	1927 Entire year Total gallons	1928 First quarter Total gallons	1928 Second quarter Total gallons	1928 Third quarter Total gallons
Standard Oil Co.	52,870	69,840	70,513	62,602	255,827	56,346	65,300	64,301
The Shell Co.	34,261	50,948	50,570	46,059	181,839	43,225	42,225	45,184
Union Oil Co.	26,369	36,882	37,565	34,824	135,642	34,341	31,838	28,349
Richfield Oil Co.	31,609	34,963	33,683	29,172	129,428	27,653	28,740	28,222
Associated Oil Co.	22,164	24,136	22,213	20,588	89,103	20,051	25,346	26,797
The Texas Company	12,876	14,107	14,815	13,887	55,685	15,876	16,958	16,199
General Petroleum Co.	7,724	8,308	8,704	7,907	32,644	8,373	14,420	15,326
Pan American	10,927	9,014	7,410	8,052	35,404	8,998	16,605	9,814
California Eastern	5,272	5,745	5,749	6,729	23,496	5,986	6,769	7,606
Wilshire	4,546	4,915	5,722	5,314	19,599	5,034	6,938	10,684
Western O. & R. Co.	1,431	2,125	3,007	3,638	10,201	4,210	6,064	5,593
Hercules Gas Co.	2,377	1,870	2,223	2,111	8,583	2,307	2,321	3,118
Seaboard Petroleum	1,240	1,677	2,078	2,853	7,849	2,992	2,518	2,218
Macmillan	542	1,451	1,969	2,010	5,974	3,072	3,590	4,076
Hancock Refining Co.	46	110	1,813	1,556	3,526	3,080	4,563	6,121
Gilmore	774	805	1,154	569	3,304	431	530	287
Vernon Oil Refining Co.	1,365	1,181	680	628	3,856	1,130	456	710
Seaside	759	910	978	1,474	4,122	2,065	2,090	2,635
United States Refining Co.	.....	409	869	819	2,097	237	474	721
Rio Grande	289	976	582	2,292	4,140	2,094	2,284	3,129
Lakeview Oil & Refining Co.	133	225	529	653	1,541	607	616	325
Navy Oil Co.	334	156	54	4	544	22	87	8
St. Helens Petroleum Co., Ltd.	.....	.....	48	389	438	1,023	1,156	1,277
Brown Process Co.	.....	50	.....	.....	50	.....	.....	.....
Edington-Witz Refining Co.	.....	427	.....	.....	.....	210	1,445	1,647
Balance	897	317	814	636	2,776	1,730	2,085	2,560
Total	218,816	270,333	273,753	254,778	1,017,681	251,105	285,430	287,921



During this period practically all of the independent refiners showed increased gallonage. The Wilshire and Hancock Refining Co. doubled their commercial sales between the first and third quaretrs of 1928, the former's distribution jumping from 5,034,651 gallons to 10,684,808 gallons and the latter's from 3,080,948 gallons to 6,121,189 gallons. Gasoline sales of the Hercules Gasoline Co. increased from 2,307,202 gallons during the first quarter of 1928 to 3,118,839 gallons in the third quarter; Macmillan Petroleum Products from 3,072,674 gallons to 4,076,311 gallons; United States Refining Co. from 237,457 gallons to 721,770 gallons; Rio Grande from 2,094,393 gallons to 3,129,876 gallons; St. Helens Petroleum Co. from 1,023,064 gallons to 1,277,520 gallons and Edington-Witz Refining Co. from 210,856 gallons to 1,647,858 gallons.

Lose Gallonage

Refining companies, although unable to dictate the price at which gasoline is to be sold by individuals leasing company-owned stations, will naturally bend every effort toward stabilization. Instructions have been issued to re-sellers to maintain present quotations as long as possible although they are at liberty to meet competition if competing stations are sufficiently close to jeopardize business or result in loss of gallonage. It is hoped that the concerted attempt to stabilize prices during the winter season will be successful but a downward revision would not be at all surprising due to a number of reasons. In fact it looks like a foregone conclusion that refinery prices will decline before long. Gasoline sales of the major companies have been adversely affected for more than a year and the inroads of independent refiners have in several instances reached serious proportions. During the third quarter of 1928, comprising the months of July, August and September when consumption is at its peak, the California sales of the Standard, Union, Richfield, Texas and Pan American companies were substantially less than the distribution during the preceding second quarter and in one instance less than the sales during the first quarter of 1928.

Peril of Crude Overproduction

Production of crude oil and natural gas in California is equally as threatening as marketing conditions, although the projected constructive proration and conservation work may alleviate what would otherwise prove a very serious situation.

(Continued on Page 83)

Laws to Aid Industry to Govern Itself

American Bar Association Committee Offers Two Bills Legalizing Voluntary and Compulsory Co-operation

The Conservation Committee of the Minerals Section of the American Bar Association has prepared its report on the legal aspects, problems and suggestions relative to the competitive drilling and operation of oil and gas pools and has drawn up two proposed measures covering agreements of operators and the operation of pools. The report and the two proposed measures will be submitted by the committee to the Minerals Section of the American Bar Association at the next meeting of the section in Memphis next October. In the meantime, however, in order that the petroleum industry, the various state governments and the federal Government and federal government agencies may have the benefit of the work of the committee, copies of the report and two measures will be sent to the Federal Oil Conservation Board, the American Petroleum Institute and to every oil and gas association in the different oil producing states.

The Conservation Committee which prepared the report and drew up the two proposed measures is composed of Senator Chester I. Long of Washington, D. C., and Wichita, Kans., chairman; James A. Veasey, general counsel of the Carter Oil Co., Tulsa; Henry M. Bates, dean of the Law School of the University of Michigan; Paul Gregg, Union Oil Co. of California; F. C. Proctor, Houston, Tex.; James W. Finley, The Empire Cos., Bartlesville, Okla.; John P. Gray, Coeur d'Alene, Idaho; D. M. Kelly, Butte, Mont., and Clarence E. Martin, Martinsburg, W. Va. The report of the committee was signed by eight of the nine members.

The report follows, in full:

To the Mineral Section of the American Bar Association:

The Committee of Nine, appointed by the Federal Oil Conservation Board, consisting of three representatives of the Federal Government, three representatives of the American Petroleum Industry, and three members of this section, to study the problem of conserving the petroleum resources of the country, after recommending a specific bill to be passed by Congress as a conservation measure, relieving oil operators in certain contingencies from the provisions of the federal antitrust acts, with proper safeguards in the public interest, urged similar legislation on the part of the important oil producing states, and also indicated that further investigation should be made into the necessity of state legislation, looking to the co-operative or unit development and operation of oil and gas pools to prevent waste, and as an aid to conservation. At the Seattle meeting of the section, this committee, among other things, was directed to pursue the study suggested by the Federal Oil Committee of Nine. According to our understanding of the authority so conferred, we have addressed ourselves to the consideration of the following questions: First, is there necessity in the important oil-producing states for legislation, clarifying the application of the antitrust laws thereof to the producing activities of oil and gas operators? If so, what should be the form of such legislation? Second, is there necessity in such states for the unit or co-operative development and operation of oil and gas pools as a means of furthering the conservation of these minerals? Third, if so, should these objects be achieved through the voluntary efforts of oil and gas operators, or should they in some degree be compelled by the police power of the states? Fourth, if compulsory unit or co-operative development and operation should be resorted to for the purposes here indicated, what should be the form of the legislative enactment or enactments? Your committee, after full consideration, has concluded that legislation of some kind is necessary, touching these matters, and, by way of suggestion only to the Federal Oil Conservation Board, the American Petroleum Institute, and the various local oil and gas associations in the important oil-producing states, submits two bills, together with the analyses embodied in this report.

Committee's Point of View

The Federal Oil Committee of Nine, in its report of January 28, 1928, to the Federal Oil Conservation Board, prefaced that document with this statement: "We take it that true conservation does not mean the withholding from present use of the Nation's natural resources. It does mean that those resources should be drawn upon without waste, and in orderly response to the economic needs of the country." To that principle your committee fully subscribes, but, unfortunately, the very nature of the business and the property rights which pertain to oil and gas holdings have prevented the application of the principle in the petroleum industry. Oil under existing conditions cannot be produced in orderly response to the economic needs of the country.

From the standpoint of the public interest, there are certain fundamentals which must be stressed at the outset:

First. Petroleum and natural gas are irreplaceable natural resources.

Second. Unlike the other irreplaceable and basic minerals, iron, coal, copper, zinc, and lead, the extent of the underground supply of oil reckoned over a considerable period of years in the future cannot be determined. Making due allowance for the acute state of overproduction which has characterized the industry in recent years, and which promises to continue for some time in the future, for the large South American production which may suffice as a reserve to our own supply, for the improved methods of finding and producing oil, and for our experience in constantly uncovering new pools, whether needed or not, and the discovery of deeper producing formations, both in new and old fields, the indisputable fact still remains that no finite mind either knows or can even be able to approximate how long this country shall have an adequate supply of crude oil to meet our petroleum needs, and particularly how long these needs may be met at prices that are fairly reasonable.

Third. Then to these considerations we must add the factor of indispensability. This element finds its demonstration in two simple questions: What, under our present economic structure, would become of American industry if it were to be deprived of an adequate and continuing supply of petroleum products at fair prices? What, in the light of modern methods of warfare, would become of the national security if our Government in time of armed conflict were to be deprived of adequate petroleum supplies for military, naval, and aviation needs? Granting that our reserves of petroleum may be sufficient for every use for 10 or even for 20 years, the problem yet remains: Conservation, as a national policy, particularly in relation to a natural resource, possessing the three characteristics just alluded to, of necessity must imply a long-range view of the situation. Thus tested, and from the viewpoint of the public interest, prudence counsels the employment of every legitimate and constructive measure that will conserve, or tend to conserve, our petroleum supply.

Of Public Concern

In another respect, there is reason for public concern in this matter. For some years the producing branch of the petroleum industry has conducted its operations either at an actual loss or upon a profit basis totally incommensurate with the financial hazards incident to finding and producing oil. Primarily, this is due to the intensely competitive drilling of oil pools which puts it beyond the power of the industry to balance supply with demand. From one point of view, this problem concerns the industry and not the public, but when we consider the predicament in its deeper significance it is of consequence to the public as well. The interdependence of American industry and commerce is a recognized and inherent incident of our whole economic structure. Petroleum products intimately and vitally touch every department of human endeavor in the country. While this observation holds true generally, it is strongly emphasized in the relationship which the petroleum industry bears to certain other basic industries, namely, steel, automotive, machinery, and the railroads. Each of these enterprises, in particular, contributes largely to the economic well-being of the others. In the nature of things a serious maladjustment in one of these great industries must react upon the others. Then the depression in the outstanding industries influences a similar condition throughout the industrial and commercial life of the Nation. From this it must follow that if the American petroleum industry is in a chronic state of economic maladjustment, the consequences in one degree or another affect all the people. Therefore, the problem before us, that of the competitive drilling and operation of oil pools, is not

(Continued on Page 77)

PROPOSED LEGISLATION WOULD HELP THE OIL INDUSTRY—REESER

By E. B. REESER

President American Petroleum Institute and Barnsdall Corporation

The year 1928 will go down into petroleum history as a year in which more progress was made toward stabilization through co-operative effort, than ever before. Perhaps the most definite step in this direction was the adoption of a code of ethics by the board of directors of the American Petroleum Institute. This action was taken after an exhaustive study by regional committees composed of many of the leaders in the distributing department of the industry. These committees represented approximately ninety per cent of the investment in distributing facilities in the United States. It is through this branch of the petroleum industry where contact is made with the public. The approval of this code by the Federal Trade Commission will correct an abuse for which the industry is receiving well-deserved criticism.

As a result of the adoption of saner operating schedules, the refining division of the petroleum industry will show improved earnings over the previous year. Refining capacity is so much in excess of demand that only by curtailing runs can this branch of the industry hope to receive any returns on its investment.

The co-operative spirit has spread through the producing department to a remarkable extent. Unfortunately, the success of voluntary co-operation is dependent on unanimous concurrence. It is like a strong chain with one weak link; the size of the link does not make much difference. In important instances it has been impossible to secure unanimous action because of the selfish or narrow viewpoint of a small minority of operators. Perhaps in some cases, failure has been due to fear that the antitrust laws would be violated. As a result of the action of a comparatively few, production is increasing at an alarming rate. Wells now drilling in proven territory will bring the total production to a point far in excess of any previous figures, and greatly in excess of consumption.

With the exception of a short period, stocks above the ground have increased persistently year by year over the past 10 years. They are now at the staggering total of 600,000,000 bbls. of crude and refined products. Wildcatting is being carried on at an unprecedented pace. Leaders in the industry have reached the definite conclusion that this economic waste must be stopped. The ultimate cost will become a burden on the public.

The conservation committee of the American Bar Association, after very careful consideration, will shortly offer proposed State legislation which will, if adopted, bring about the co-operative development of new oil and gas pools and stop the present wasteful competitive drilling of new oil pools. This legislation will enable the industry to balance supply and demand. The legislation will be of such character that a majority of operators in any pool may—if they so elect—ask the State to take such action (under the proposed laws) as seems necessary to properly safeguard our natural resources. A majority of the leaders of the industry favor such legislation and as a result of this attitude, I look forward to the new year with confidence.

TEXT OF PROPOSED BILL TO LEGALIZE VOLUNTARY CO-OPERATIVE PLANS

An act to promote the conservation of petroleum and natural gas, to prevent the waste thereof, to encourage the establishment and maintenance of underground reserves of such minerals, and for these ends to sanction certain agreements among oil and gas operators producing, or having the right to produce, said substances from the same oil and gas pool.

Be it enacted by .....

Section 1. Definitions. For the purposes of this act:

(a) The term, "oil and gas pool," or the word, "Pool," shall comprise and include that area which is underlaid, or which, from geological or other data, or from drilling operations, appear to be underlaid by a common accumulation of oil or gas, or both.

(b) Whenever the word, "person," or "persons," is used, the term shall include individuals, partnerships, corporations, and all manner of associations.

(c) The term, "oil and gas operator," or the term, "operator," shall include any person who has the right to produce oil or gas, or both, from land in this State, and to appropriate as his property all or part of the production resulting from his operations.

(d) The term, "agreement for the co-operative development and operation of an oil and gas pool," shall mean and contemplate an agreement among the oil and gas operators owning separate holdings in the same pool, whereby each operator agrees to develop and operate his separate holding, or holdings, in said pool in accordance with all or any of the following methods and practices: (1) A method common to the pool for the apportionment of wells to acreage, that is, the determination of the number of wells which may be drilled upon a specified number of acres. (2) A method common to the pool for the spacing of wells, that is, the determination of the location of all wells with respect to the boundary lines of all properties situate in the pool, so that each operator and royalty owner will be protected from drainage and from loss of gas pressure and energy. (3) A method common to the pool for determining the time that all wells therein may be drilled. (4) A method common to the pool for determining whether or not the producing wells therein shall be operated to their full capacity. If under this provision a limitation on production from the wells in the pool shall be imposed, such limitation shall operate equally and fairly in respect of all wells in the pool. In the event of such limitation, the extent, manner, and duration of the same specifically shall be set forth in the co-operative plan adopted for said pool under the provisions hereof. (5) A method or methods common to the pool for the control of the original gas pressure and energy to the end that orderly production from said pool shall be brought about, and for the further purpose of enlarging the ultimate recovery of oil and gas therefrom. (6) A method or methods common to the pool for the injection of gas, air, or any other substance or vapor for the purpose of restoring the pressure in the oil producing sand or sands, to the end that the objects set shall be set forth in the co-operative plan adopted for said pool under the provisions hereof. (5) A method or methods common to the pool for the control of the

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TEXT OF PROPOSED BILL TO ENFORCE CO-OPERATIVE OPERATION OF POOLS

An act to conserve the oil and gas resources of the State of ..... to adjust and regulate the correlative rights and obligations of oil and gas operators and of royalty owners therein, and to provide for the co-operative development and operation of new oil and gas pools.

The Purpose

The purpose of this act is twofold: First, to adjust and regulate the correlative rights and obligations of oil operators and royalty owners in the same oil and gas pool, which interdependent rights and obligations have their origin in the nature and habits of oil and gas under ground. Second, in the public interest to conserve for the people of the State these irreplaceable and indispensable natural resources. Now, therefore:

Be it enacted by .....

Section 1. Definitions. For the purpose of this act:

(a) The term, "oil and gas pool," or the word, "pool," shall comprise and indicate that area which is underlaid by a common accumulation of oil or gas, or both. The term, "new oil and gas pool," or "new pool," shall mean an oil and gas pool wherein the initial discovery in paying quantities occurs after this act shall go into effect.

(b) Whenever the word, "person," or "persons," is used, the term shall include individuals, partnerships, corporations, and all manner of associations.

(c) The term, "oil and gas operator," or the term, "operator," shall include any person who has the right to produce oil or gas, or both, from land in this State, and to appropriate as his property all or part of the production resulting from his operations.

(d) The term, "royalty owner," shall include any person who has the right to share in the oil and gas production, or both, from any land in this State where such land is being operated for said purposes by another.

(e) The term, "co-operative development and operation of an oil and gas pool," shall mean the development and operation of each separate holding in the same oil and gas pool, in accordance with all, or any, of the methods and practices in this paragraph set forth, to-wit: (1) A method common to the pool for the apportionment of wells to acreage, that is, the determination of the number of wells which may be drilled upon a specified number of acres. (2) A method common to the pool for the spacing of wells, that is, the determination of the location of all wells with respect to the boundary lines of all properties situate in the pool, so that each operator and royalty owner will be protected from drainage and from loss of gas pressure and energy. (3) A method common to the pool for determining the time that all wells therein may be drilled. (4) A method common to the pool for determining whether or not the producing wells therein shall be operated to their full capacity. If under this provision a limitation on production from the wells in the pool shall be imposed, such limitation shall operate equally and fairly in respect of all wells in the pool. In the event of such limitation, the extent, manner, and duration of the same specifically

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Governor Moody Urges Changes in Texas Laws To Check Production

AUSTIN, Tex., Dec. 31.—Governor Moody has issued the following statement on the movement to withdraw University of Texas lands from sale because of the low price of oil:

"1. The oil and gas rights should be withdrawn at this time because of the low price of oil and a consequent expected low price of bids for these rights.

"2. If these rights are located on territory where an oil field will be brought in, royalties already being realized by the university and school funds would be depressed even further by additional production of oil, which would tend to lower the present market price.

"3. Though the 1925 statute was only recently passed, it is already antiquated and should be repealed. Where the statute took care of a situation of only a very few wells on these lands the territory already is proven and to date over $80,000,000 has been realized from the oil produced on these lands.

"This territory is no longer wildcat territory, and under the present law the State does not have the liberty to make a contract to protect itself in proven territory as does a private landowner. The law should be amended so as to allow the State to get what the land is worth for its oil and gas leases, just the same as individuals.

"If there is an overproduction of oil at this time contributing to the low prices and a new field is brought in after development of the rights secured in the sale scheduled for January 2, the result would be disastrous to the royalties coming to the State. Why the Land Commissioner advertised these rights for sale on January 2, six days before the forty-first Legislature will convene, I do not know, but I will do everything possible to prevent the sale proceeding on that date."

PROPER LEGISLATION WOULD HELP NATION, PUBLIC AND OIL INDUSTRY

By Frank Phillips
President, Phillips Petroleum Co.

The oil industry has been giving increasing attention during the past year to conservation and the economic problems arising from overproduction of raw material and overexpansion of refining and marketing facilities. Some progress has been made; however, much more remains to be accomplished.

With the exception of one year, storage of oil and petroleum products has increased annually during the last 10 years, in addition to which there have been proven large reserves in the ground.

If the history of oil conservation measures is frankly examined, it must be recognized that progress has been limited to spasmodic and uncertain co-operation to prevent demoralization in grave emergencies. Such co-operation has been secured with difficulty and maintained only by frequent meetings where the threatened disruption of the program was from time to time temporarily prevented by modification and concessions.

I believe, that by means of the slow process of education, voluntary co-operation might eventually result in the successful solving of the industry's problems. However, we are faced with the fact that the progress of voluntary co-operation is too slow to keep pace with the problems of oversupply. We must take decisive steps which will quickly produce permanent results—not results 10 years hence.

Constructive Legislation

Voluntary co-operation permits a small minority—sometimes only one operator—to frustrate and prevent the efficient and orderly development of pools which the majority desire and which sound economics and true conservation demand.

Consequently, I firmly believe that the industry needs the assistance of appropriate laws which it can invoke at proper times to prevent crises. When I speak of legislation, I do not mean governmental control or legislation as it is commonly understood, and I am of the opinion that the fear of such governmental control has been the biggest stumbling block in securing a favorable attitude toward constructive legislation.

The industry clearly needs the assistance which can be invoked by a majority of producers interested in a pool, to require full co-operation by all when minorities prevent orderly and economic development. The results gained through the practice of such co-operation would in a short time demonstrate the benefits, not only to everyone in the industry through decreased costs and increased recoveries, but also to the consumer who would be the indirect beneficiary. With appreciation of the benefits would come voluntary co-operation and it would rarely be necessary to call the law into actual use.

Would Aid All Concerned

Although the character of legislation and regulation now applicable by Federal and State governments to railroads, other public utilities, or banks would not be in any respect appropriate to the oil industry, it is interesting to note, in view of the widespread and natural prejudice against government intervention in industry, that such regulation does not necessarily mean injury to the business involved, but on the contrary the industries referred to have been enjoying a more stable prosperity for some years, and that their securities are in high favor with the investing public.

Three notable bodies, namely the Federal Oil Conservation Board, composed of four members of the President's cabinet; a committee of the American Petroleum Institute, composed of practical oil producers; the Committee of Nine, which had equal representation from the oil industry, the Federal government and the American Bar Association; each after exhaustive research has declared the necessity for such legislation.

I favor the enactment of appropriate uniform laws by the various oil states—legislation recommended and endorsed by the industry itself. The industry should stop temporizing, frankly face the facts and seek the enactment of appropriate laws.

Such action will help the petroleum industry to carry on for the benefit of the nation, the public and itself.

Straighter Thinking Helping the Industry Says President Teagle

By W. C. Teagle
President of Standard Oil Co. (New Jersey)

The outstanding fact in 1928 petroleum history was the victory of common sense or the return of sanity to the plans of the oil men.

The good results of straighter thinking have to date been most apparent in the producing end of the business.

With the advice and help of various state authorities, they subordinated immediate selfish considerations to the community interest and co-operated under the law with state regulatory commissions. In California, Wyoming, Oklahoma and Texas voluntary conservation plans brought about more orderly production, tended to eliminate waste and prevented demoralization of markets.

The reward is that we start 1929 with a smaller carry-over than was inevitable under old conditions. Crude stocks, which were 380,000,000 bbls. at the end of 1927, had increased 12,541,000 bbls. by the end of October, 1928, as compared with an increase of 59,500,000 bbls. in the corresponding period of 1927. Gasoline stocks decreased nearly 6,000,000 bbls. by the end of October, 1928, as compared with 9,500,000 in the corresponding period of 1927. Domestic crude production for 1928 is estimated at 887,000,000 bbls. In 1927 total production was 906,416,000 bbls.

Five fields attained their maximum yields in 1928, two in Oklahoma, two in Texas and one in California, and accounted for most of the flush production. There are in sight for 1929 possible new fields of importance in all three states.

We start 1929 with voluntary curtailment in consonance with the law a proved success where it has been tried. It is certainly hoped in the interest of the public as well as the industry that this effort towards economic control of petroleum reserves will become world-wide. It is the most promising factor in the petroleum outlook for 1929.

America's Production Leadership

California, Oklahoma and Texas Have Produced 64.8 Per Cent of the World's Petroleum

By James McIntyre

Over 17,000,000,000 bbls. of crude oil have been produced in the world from 1857 to 1928, both inclusive. The estimated total production is 17,110,944,000 bbls.

The fields of the United States have produced 11,238,425,000 bbls., or 65.66 per cent of the whole, while all the foreign fields combined have contributed 5,872,519,000 bbls., or 34.34 per cent.

California, Oklahoma and Illinois together have produced 5,886,597,000 bbls., or more than all the foreign fields combined, and California, Oklahoma and Texas have produced 7,278,170,000 bbls., which is 64.8 per cent of the total production of the United States and 42.5 per cent of the production of the world.

That is the story in brief of the dominant position the United States holds and has held for all but a few years since the beginning of the petroleum industry. There were years in which Russia produced more oil than the United States. In 1898 the Muscovite for the first time passed Uncle Sam in total production—61,610,000 bbls. as against 55,364,000 bbls. This Russian supremacy continued until 1901, inclusive, but never after that year. Russia reached its production peak in 1901 with 85,168,000 bbls., while in the same year the United States produced 69,389,000 bbls. It is interesting to note that in 1901 98.8 per cent of all the production in the United States was coming from New York, Pennsylvania, Ohio, West Virginia, Indiana, Illinois, Texas and California, and of these Ohio was the leading producing state with a total of 21,648,000 bbls., an average of about 60,000 bbls. a day! The Seminole Field in Oklahoma in 1927 produced more oil in 45 days than the combined fields of Ohio did in 12 months.

In 1902 the Spindletop Field in Texas and new pools in California increased the production of the United States about 19,000,000 bbls., while Russian production took a slump from which it never fully recovered.

California's Great Record

California has been the world's greatest producing division. The first recorded production in that State was in 1876, although oil was discovered there previous to that year. It was not until 1895 that the State produced 1,000,000 bbls., an average of 2,740 bbls. a day, and not until 1900 that its production averaged over 10,000 bbls. a day for a year. It steadily increased its output until in 1907 it averaged over 100,000 bbls. a day for the year. In 1910 its daily average had reached beyond the 200,000-bbl. mark, and in 1921 it averaged over 300,000 bbls. a day. In 1923-24-25-26-27-28 the State exceeded 600,000 bbls. a day in crude oil output.

California for 53 years has averaged over 153,000 bbls. of oil per day. This average, covering a period of over half a century, is greater than the average for the peak years of most of the producing divisions listed in the accompanying table. No state east of the Mississippi River ever averaged 100,000 bbls. a day for even one year, and Mexico is the only foreign country that has ever exceeded 150,000 bbls. a day for one year.

California's best year was 1923, when it produced 262,876,000 bbls., but it may exceed this in 1929 if the tremendous potential production of its deep-sand horizons is developed fully. Up to the close of this year California's total production of 2,977,113,000 bbls. is 958,387,000 bbls. more than the combined production of all the countries of the world outside of the United States, Russia and Mexico.

Oklahoma Passes Russia

Oklahoma ranks second in production, with a total of 2,532,175,000 bbls from 1897 to 1928, both inclusive. It outranks Russia by a couple of hundred million barrels, even though Russian production began in 1863. Oklahoma produced 1,000 bbls. in 1897 and was seven years in producing 200,000 bbls., so its real production began in 1904, when the shallow fields around Nowata and Bartlesville were being exploited. In that year the State produced 1,367,000 bbls. and the following year, with production extending across Osage and Pawnee Counties and into Tulsa and Creek Counties, the production increased to 9,000,000 bbls., and the following year, with the Glen Pool going strong, reached 43,524,000 bbls., or an average of more than 100,000 bbls. per day. It averaged over 200,000 bbls. a day in 1914, but did not average as high as 300,000 bbls. a day until 1921. It passed the 400,000-bbl. mark as a daily average for a year in 1922, and the 700,000-bbl. mark in 1927, with Seminole at its height. Oklahoma's production of 277,775,000 bbls. for that year stands as a record.

Like California, the production of Oklahoma alone far exceeds that of all the foreign countries in the world combined, if Russia and Mexico are excluded.

California, Oklahoma and Russia have produced over 45 per cent of the world's total.

Russia Once Led All

Russia is third on the list of producers and the largest producer outside of the United States. Since 1863 Russia has figured largely in the world's supply of crude petroleum, and it was not many years ago that it outranked California in total crude output. At the end of 1924 Russia had produced 2,053,140,000 bbls. of oil and in that year California assumed first place with a total of 2,057,663,000 bbls. Since that time Oklahoma has displaced Russia and it appears only a question of time before Texas will have relegated the Slav to fourth rank, as Texas is coming fast and Russia's peak production occurred over a quarter of a century ago. When Russia was its best as an oil producer, Oklahoma produced an average of 28 bbls. a day, Texas about 12,000 bbls. a day and Kansas about 440 bbls. a day. Louisiana, Arkansas and Montana were not in the producing list, and there was only a very small production in Wyoming and about 125 bbls. a day in Colorado.

Texas Is Coming

Texas scored its peak production in 1928. It is estimated here at 254,749,000 bbls. The field was opened in 1896, its first production of consequence coming from the Corsicana shallow sand field, while Spindletop in 1901 put it among the important of the world's producing divisions. It ranks fourth in all-time production, with a total of 1,777,881,000 bbls. It is a territory of enormous potentiality, and had the fields in West Texas, notably Yates Pool and Hendricks Pool, not been rigidly prorated and drilling restricted, Texas would have produced more oil than the pipe line and tank car facilities of the State could have handled. The Yates, Hendricks, Borger, Mexia, Powell, Spindletop, Humble and Burkburnett Pools in Texas are ranked among the world's greatest producing pools.

Mexico Declining

Mexico, which has produced 1,518,087,000 bbls. since oil was discovered in commercial quantities in 1901, saw its peak in 1921 when it produced 193,328,000 bbls. It is steadily on the down grade and in 1928 was estimated to have produced 47,000,000 bbls. Mexico did not assume real importance until 1911 when it produced 12,553,000 bbls. In three years, 1920-22, it produced 539,216,000 bbls., a daily average for the whole period of 494,000 bbls.

Pennsylvania's Vanished Glory

Pennsylvania, the cradle of the oil business in the United States, ranks next to Mexico in production for all time. Oil was discovered commercially in 1859 in the Keystone State and at one time it was the leading field in the world. In 1881, when Pennsylvania produced 27,-

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RELATIVE RANK AND ESTIMATED TOTAL PRODUCTION OF THE WORLD'S PRODUCING DIVISIONS SINCE THE BIRTH OF THE OIL INDUSTRY

	Rank, field—	Years	Total production bbls.	Peak year	Peak year production bbls.
1.	California	1876-1928	2,977,113,000	1923	262,876,000
2.	Oklahoma	1897-1928	2,523,176,000	1927	277,775,000
3.	Russia	1863-1928	2,325,556,000	1901	85,168,000
4.	Texas	1896-1928	1,777,881,000	1928	*254,749,000
5.	Mexico	1901-1928	1,518,087,000	1921	193,328,000
6.	Pennsylvania	1859-1928	816,282,000	1891	31,424,000
7.	Ohio	1876-1928	535,766,000	1896	23,941,000
8.	Kansas	1890-1928	504,818,000	1918	45,451,000
9.	Louisiana	1902-1928	401,638,000	1920	35,714,000
10.	Illinois	1889-1928	386,308,000	1908	33,686,000
11.	Dutch East Indies	1893-1928	383,398,000	1927	25,967,000
12.	West Virginia	1876-1928	361,667,000	1900	16,196,000
13.	Arkansas	1921-1928	313,494,000	1925	77,398,000
14.	Rumania	1857-1928	302,148,000	1928	*28,000,000
15.	Persia	1913-1928	298,953,000	1927	39,688,000
16.	Wyoming	1894-1928	298,262,000	1923	44,785,000
17.	Venezuela	1917-1928	242,974,000	1928	*105,000,000
18.	Poland	1874-1928	213,350,000	1909	14,933,000
19.	British India	1889-1928	189,342,000	1919	8,736,000
20.	Indiana	1889-1928	115,783,000	1904	11,339,000
21.	Kentucky	1883-1928	96,792,000	1919	9,278,000
22.	Peru	1896-1928	92,072,000	1926	10,782,000
23.	New York	1882-1928	68,206,000	1882	6,685,000
24.	Japan and Taiwan	1875-1928	56,581,000	1916	2,963,000
25.	Argentina	1907-1928	51,550,000	1928	*8,800,000
26.	Trinidad	1908-1928	45,108,000	1928	*6,200,000
27.	Colombia	1922-1928	43,219,000	1928	*20,000,000
28.	British Borneo-Sarawak	1913-1928	35,847,000	1928	*5,200,000
29.	Montana	1916-1928	30,942,000	1926	7,727,000
30.	Canada	1862-1928	27,224,000	1900	913,000
31.	Colorado	1887-1928	21,848,000	1927	2,831,000
32.	Germany	1880-1928	19,152,000	1910	1,032,000
33.	Egypt	1911-1928	16,731,000	1918	1,935,000
34.	France	1919-1928	5,018,000	1918	633,000
35.	Czechoslovakia	1919-1928	1,077,000	1925	158,000
36.	Other American fields	1889-1928	8,359,000	....	.....
37.	Other Foreign fields	1901-1928	5,132,000	....	.....
	Total		17,110,944,000		

*Estimated.

TEXAS UNIVERSITY LANDS WITHDRAWN BECAUSE OF LOW PRICE OF CRUDE OIL

FORT WORTH, Tex., Jan. 1.—Following Governor Moody's statement that Land Commissioner Robinson had taken all but 12,800 acres of the 103,000 acres of University of Texas land to have been sold January 2 off the market, the land commissioner returned to Austin and declared that 49,980 acres would go on sale. The remaining 53,020 acres is to be sold at a later date. Mr. Robinson is quoted as saying he told the governor anywhere from 10 to 40 sections would be sold. As a result Attorney General Pollard announced his intention of filing suit for a temporary injunction early Tuesday morning seeking to restrain the commissioner from selling any of the land at this time.

For several weeks it has been rumored the land to be sold January 2 would be removed from the market temporarily. State officials desired the land be listed for sale at a later date in hopes of improvement of general conditions in the oil industry. However, concerted action was not in motion until a few days ago.

Last minute efforts to postpone the sale revealed plans of court action to accomplish that end while on the other hand those adverse to postponing the sale were preparing to institute court proceedings to counter attack the former plans. Governor Moody considered calling a special session of the legislature but rejected the plan because of the shortness of time and the opposition that would have been encountered preventing suspension of rules necessary to enact legislation before date of the sale.

The Board of Regents sought a postponement of the sale until after the legislature convenes January 8. At the opening of the session an effort will be made to have the land leasing act changed.

Some time ago Mr. Robinson agreed not to advertise all of the lands for sale early in January but insisted upon advertising 103,000 acres because he had promised that some of the land would be on the market. During the next session of the legislature the land leasing act may be changed and the 1,500,000 acres of University of Texas land in West Texas may not be offered for sale for several months.

The Land Commissioner contended it was mandatory on him to put the leases on the market. The State attorney-general's department through C. W. Trueheart, an assistant, advised the Land Commissioner he could legally postpone

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Deep Holes Revolutionize Equipment

Everything That Goes Into a Rotary Outfit Has Been Enlarged or Strengthened to Meet Added Stresses

By J. L. Dwyer

The science of deep well drilling has during the past two years been making radical changes in the oil field equipment used in Oklahoma. The changes have been gradual, so gradual in fact that it requires a close comparison of the different items of drilling machinery to realize what a complete transformation has been effected. In outward appearance, the heavy rotaries are the same, and the changes have been of size rather than of character, for the functions of the apparatus are the same, and they have been made larger and heavier in order that they may cope adequately with the heavier materials used, and may handle the higher pressures easily. The faster drilling time necessitated a more rapid rate of operation for the tools, and this also made imperative larger and heavier machinery.

Since the start of the Greater Seminole area two and one-half years ago, the size of almost every piece of rotary drilling equipment has been increased, and the picture accompanying this story shows at a glance the mammoth material which is now standard. Casing elevators taller than the tooldresser who is handling them; Wigle casing hooks of the man-killer type which weigh 1,600 pounds, and travelling blocks shown above the hooks. The largest type of block (and the type most commonly used) weighs 5,000 pounds and is 66 inches in height. All these huge pieces of equipment have been made necessary by the Wilcox sand operations in the Greater Seminole and St. Louis and Maud Pools of central Oklahoma.

Gradual Evolution

The changes have been made gradually, and being confined as they were to weight without much change in the outward appearance of the material, it is quite natural that they failed to attract very much attention. In the current operations in the fields mentioned, the use of all this heavier equipment has resulted in a great change in the weight which a derrick is required to carry and support during the drilling of a well. An instance of how this weight has been increased and how it has attracted little notice happened in Tulsa recently. The president of a prominent oil company talking to another official remarked that one of his drilling contractors was requesting that a certain drilling rig be strengthened, and braced more heavily. The president objected to this, stating that his engineers had made an inspection of the rig, and claimed that it was good to handle 35 or 40 tons. Asked how deep the well was, he replied 4,500 feet deep, and when told that the derrick was already supporting a weight of 75 tons, he was greatly surprised.

Great Load on Derrick

As a matter of fact, a well 4,500 feet deep using rotary equipment would have 75 tons hung on the derrick when all materials are considered.

The weight would be distributed as follows:

	Lbs.
Drill pipe, 25 pounds to foot	112,500
Tool joints, 165 pounds to joint	26,400
Stem, block, hooks and all above table	14,000
Rock bit	1,000
Total weight carried by derrick	153,900

Began With Drill Pipe

Just where it was necessary to start the heavier equipment in use is difficult to state; but once it was decided and certain parts were made heavier, the entire structure of the drilling tools had to be changed to conform with the new pieces. The process of enlarging and strengthening the material probably originated with the drill pipe. In former times, drill pipe weighing 22 pounds per foot was used, and when the weight of this item was changed and drill pipe weighing 25 pounds per foot was used, the first important step in changing rotary equipment in Oklahoma began.

The drill pipe formerly used was made of mild steel which would hardly stand the present-day demands of speed and pressure. It soon became apparent that this grade of steel would not prove equal to the heavy duty rotary work, and so steel of an improved grade was employed in order that it might withstand the tortonial strain, and also that additional wear might be expected from the pipe.

Antifriction Bearings

With the changes in the drill pipe, it naturally became necessary to have machinery which was capable of picking up and handling the added weight without any unnecessary strain and stress, and so the matter of changing the equipment passed from the drill pipe to the power parts of the rig. Probably one of the most important changes in the equipment was the change from the friction to the antifriction type of bearing. In engines and movable parts of the drilling outfit, the babbitt type of bearing has been used almost exclusively, and faster speeds demanded the antifriction type of bearing, so that today roller bearings are the rule in almost all movable parts.

Two and Three Boilers

With the demands for more power, it became necessary to have larger boilers capable of carrying heavier pressures and generating more steam. The size of the oil field boilers used in rotary drilling was therefore increased to 125 horsepower, and the boilers were designed for working pressures of 250 pounds. While two boilers normally suffice, and will furnish sufficient steam, the danger of oil field work where water conditions are not the best, generally results in the use of three boilers. By the presence of the third boiler, two working boilers are insured at all times, while the third may be cleaned out at will.

Going to larger boilers generating more steam, naturally required having suitable engines to handle the steam, and so the engine was subjected to a change. It was necessary to have an engine which could handle the 75-ton load of the heavy rigs, and which would operate efficiently under these conditions. This caused the change from the babbited type of friction bearing to the roller bearing or antifriction bearing. For the ample protection of the roller bearings working under exacting conditions, it was necessary to keep all dirt, mud and foreign substances out, and with this in mind, the enclosed type engine running in an oil bath was designed.

Increasing the Power

Making the engines and boilers suitable to the heavier conditions resulted in furnishing ample power, but the transmission required some kinks being taken out of it in order that it might be equal in efficiency to the power plant, for the chain had to be perfect, and no weak links were to be admitted. The rotary draw works and hoist were next given attention, and all shafts were increased in diameter sufficiently to enable them to withstand the extra power. Increasing the diameter of the shafts meant added friction on the bearings, and so the majority of the bearings on the hoist and draw works were changed to the roller type.

The next item to be changed was the rotary line, and in order to support the additional load and stand the extra power, the size of the rotary line was increased from 1 inch to 1¼ inches. Following the line the traveling block had to be increased in size and strength to accomodate the larger rotary line and to handle the extra load. The largest size described above are 66 inches in height and weigh 4,900 pounds. The sheaves used in these blocks have 36-inch diameters, and they are also mounted on roller bearings. These traveling blocks have been made with the necessary guards, and all features of their construction have been enlarged.

To keep up with these changes, a larger swivel was required, and the size of the rotary swivel was increased to support the extra load. When it came to the actual work of rotating the tools, the old-style bearings were found unsuitable, and the teeth of the rotary table were cast teeth which proved unequal to the newer requirements. Under the new workings, the teeth of the rotary table are made of forged steel alloy, and the pinion shaft is made of similar material. The teeth are machine cut to insure the proper fit, and the rotary table is also equipped with and mounted upon roller bearings, instead of the friction type bearing.

Lengthening Rock Bits

At the bottom of the drill string, the rock bits formerly used were rather short, and according to some students, this had a tendency to promote crooked hole drilling. In order to overcome this difficulty, the rock bits are now being made somewhat longer.

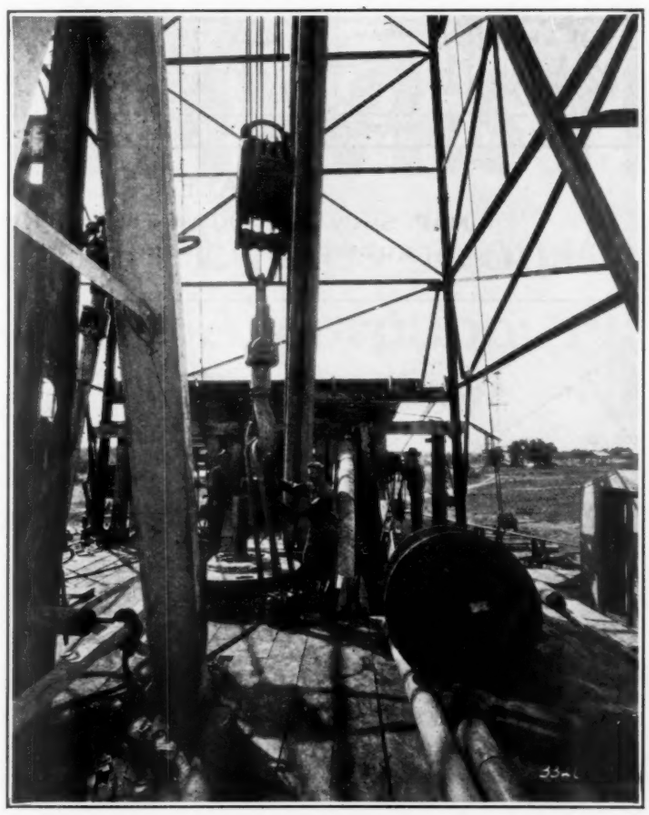
There was one matter which the old-style rotaries had always been able to do exceptionally well, and that was to turn the tools fast enough, but the problem of having sufficient pump capacity to supply the mud-laden fluid to the bottom of the hole furnished the drawback. The smaller size rotary pumps simply were not capable of supplying the fluid fast enough without rapidly tearing themselves up on account of the high rate of speed at which they were required to work. The old pumps used in Oklahoma rotary work had a size of 12 by 6¾ by 14 (approximately) and they were generally run at a speed of 65 to 70 strokes per minute. The new-style pumps conform rather closely to the 14½ by 7 by 18, and they are sufficiently large to run slowly and furnish ample mud fluid to the tools at a pump speed of 50 strokes per minute.

Improving Fluid Flow

The openings in the rotary hose and the swivel were much smaller than the openings in the tool joints which were the smallest openings between the pump and the bottom of the hole. This small opening still restricted the flow of fluid even at the greater pressures and volumes made possible by the new pump capacity, and so the size of the holes in the hose and swivel were increased from 2 and 2½ inches, the former sizes, to 3 inches. The main object of this was to increase the volume of fluid in order to speed up the circulation and carry the drill cuttings to the surface more rapidly, thereby allowing faster drilling, and keeping the bottom of the hole in better condition by keeping it free from excessive cuttings.

These are the changes which have been made in the outfits which are used in nearly all 4,000-foot drilling. They describe the largest steam-driven rotary tools now used in the 4,000-foot territory. Glancing at their specifications, it seems that they will suffice for all time, but in this connection it might be mentioned that at the International Petro-

(Continued on Page 83)



A heavy-duty rotary outfit in the Maud oil field. Elevators and traveling blocks each six feet in height give an idea of the size of the equipment.

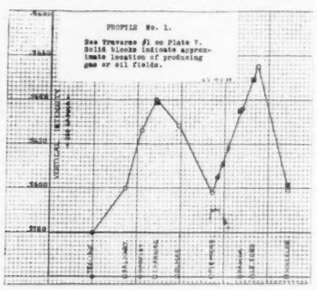
Magnetometer Possibilities of Texas

Two Areas of Especial Interest While Other Magnetic Anticlines Are Worthy of Further Detailed Study by Oil Companies

By L. Spraragen

The accompanying article is the second part of the survey of Texas. The first part was published in the December 20 issue of The Oil and Gas Journal.

Another very interesting result obtained with the magnetometer is the locating of the Mexia fault. Even with the few stations available in this part of the State it is seen from an examination of Plate 1 that an unusual disturbance exists in the vicinity of Franklin, Robertson County, extending north through Groesbeck, Limestone County, thence north through Corsicana, Navarro County. Comparing this part of Plate 1 with The Oil and Gas Journal's map of the Mexia-Powell fault zone (May 14, 1925) readily demonstrates the accuracy of the magnetometer in picking out the axis of the fault. Needless to say that had there



been several more west to east magnetometer traverses taken across this fault its location could probably have been determined with considerable accuracy. Plate 2 shows the same good results except in this case the fault appears to follow the west axis of a large anticline. Profile 10 gives the general relation along this same fault line.

The reader's attention is called to the existence of a similar magnetic condition to the east of the magnetic low at Centerville in Leon County. Here we find in Plate 1 that there is an indication of an unusual magnetic disturbance in the form of an anticline extending from Madisonville, Madison County, north through Crockett, Houston County, northwest

(Continued on Page 75)

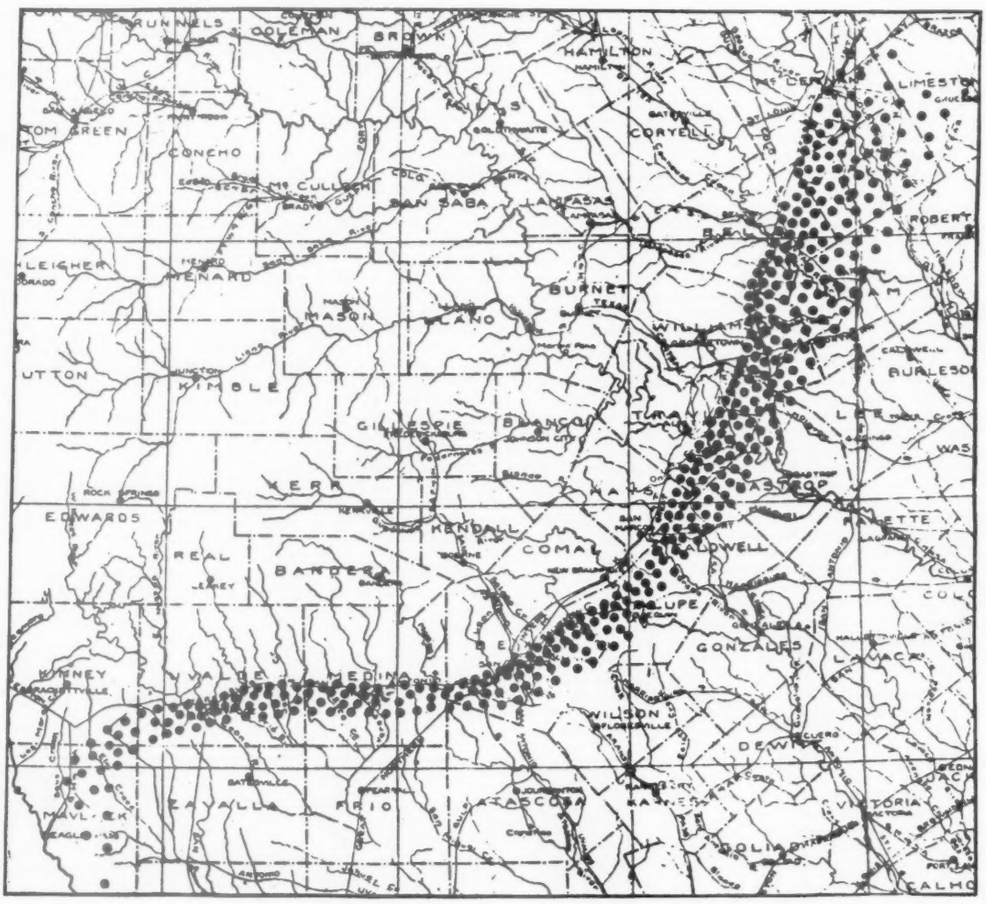


PLATE 4A
MAP SHOWING DOWN THROW OF BALCONES ESCARPMENT. (TAKEN FROM U. of T. BULLETIN 2539).

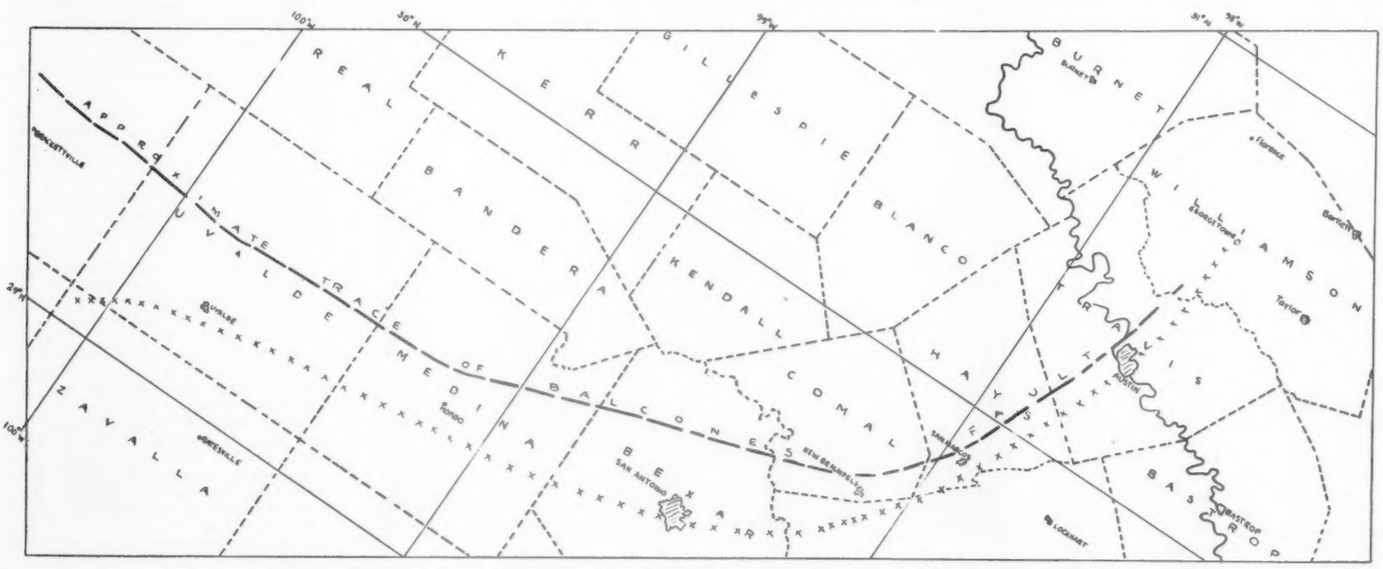
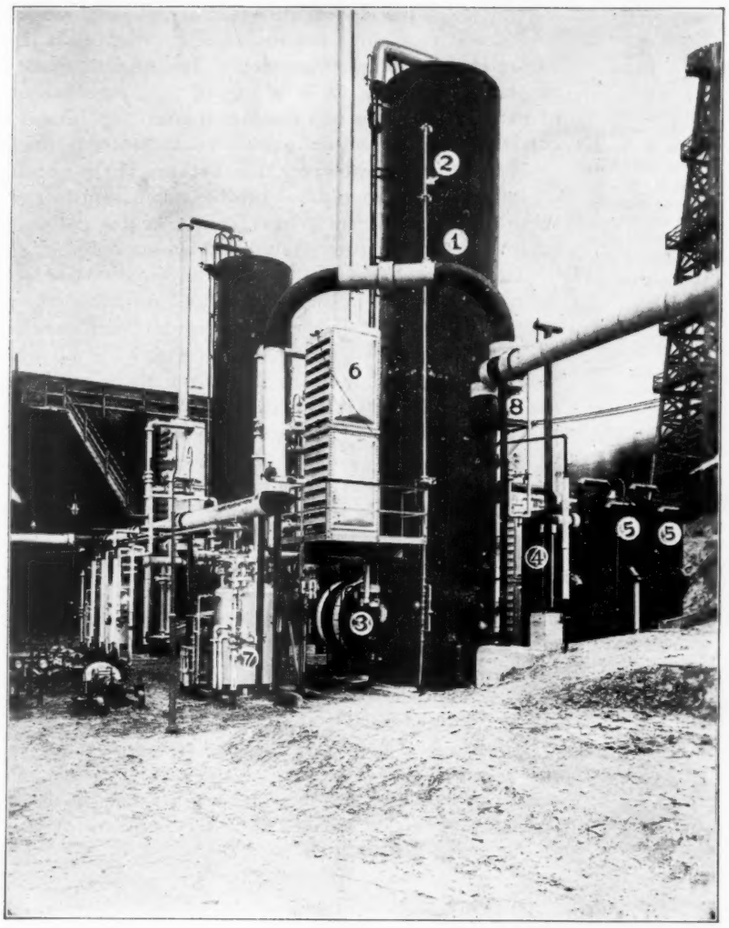


Plate 4—Balcones Fault (from U. of T. Bulletin 2744) line of unusual magnetic disturbance.



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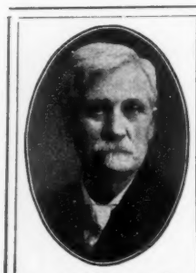

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MEMBER AUDIT BUREAU OF CIRCULATIONS

LAWS FOR THE INDUSTRY

In considering the production possibilities of 1929 leaders of the industry have been asking themselves if voluntary co-operation can be relied upon to cope with the situation.

Having in mind the difficulties encountered and but partially overcome during the past year they are doubtful.

The weakest spot in voluntary co-operation in the oil industry is that a lone dissenter may exert an influence altogether disproportionate to the weight of the majority. By refusing to co-operate he may force others in self defense to action they would not take.

An operator who insists on drilling when the rest want to shut down for the general good compels others to drill and nullifies the whole co-operative movement.

What is the industry going to do about him?

The statement from President E. B. Reeser of the American Petroleum Institute appearing in this issue of The Oil and Gas Journal indicates that leaders of the industry are about convinced the only way to deal with such obstruction is to seek legislation that will put the authority of the State behind the will of the majority in trying to conserve the oil in the ground.

President Frank Phillips of the Phillips Petroleum Company is of a similar opinion and expressions from others are of like effect.

The experience of the past year in co-operation with the state officials in Oklahoma, Texas and California, has suggested the line upon which such legislation might be drafted.

In approaching this subject the utmost caution must be exercised. The legislation sought is to give effect to the will of the industry. It must be framed or approved by the industry and carefully restricted to that alone.

Its prime purpose should be to ratify the self-regulation of the industry in co-operation with the state; not at all regulation imposed from outside upon the industry. That should be kept clear.

President Coolidge suggested the industry solve its own problems. If state co-operation is needed it should be granted.

The state already has authority to protect the public interest and has been exercising it. But the state, like the industry, has been thwarted in the conservation program by the dissidents.

The proposed legislation would not only enable the industry to give effect to its will but would give power to the State to support that co-operation against obstruction.

That appears to be the view now being taken by leaders in the industry facing the overproduction possibilities of 1929.

The legal difficulties have been thoroughly discussed by the Committee of the Minerals Section of the Bar Association.

Since one operator has the same constitutional right to refrain or limit his production as another has to drill without restriction or produce to capacity, it is argued that, considering the problem of national conservation, the law should step in and reconcile the correlative rights and obligations of operators in the same pool.

It is recognized however that, because of the peculiarities of the oil industry, this should not involve submission to any far-reaching scheme of governmental interference or regulation which would hamper the industry in finding and maintaining our oil supply.

The proposal that is being most favorably considered is that the operators involved in each case should formulate the particular co-operative plan to be submitted to the state conservation agency.

The machinery of the State is provided for but whether it is invoked is to depend upon the will of the majority of the operators in the pool, a majority that shall be not only numerical, but representing a majority of the acreage and, in a producing pool, a majority of the production.

The state commission may reject the plan but cannot modify it, thus preserving the self-government of the industry, while at the same time affording the utmost protection to the public interest.

The legislation is being drafted with the principle kept steadily in mind that one body of property owners cannot prescribe the manner in which another body of property owners may use their property. Authority for enforcement rests wholly within the law and the power of the state.

The majority may determine the plan but whether it is enforced is to be decided by official sanction under the law.

The due process of law clause of the constitution is respected by provision for appeal to court but the mandatory injunction or receivership proceedings for enforcement are not to be stayed pending appeal, a provision deemed necessary because of the character of the property dealt with.

Ample latitude is provided for amendment as conditions change.

Another feature of special importance deals with that difficulty of express or implied drilling or producing obligations which has so often hampered voluntary agreements. The proposed legislation would give the state body power to suspend drilling obligations which would nullify the conservation covenant.

The point raised that such an act by the state legislature would violate the impairment of contract clause of the Federal Constitution is met by the rejoinder that the provision of the Federal Constitution rises to no higher dignity or sanctity than the due process clause and that if the police regulation thus enacted into law is reasonable it will survive the impairment of contract clause as well as that of due process.

In other words, the courts will be open to protect the rights of all.

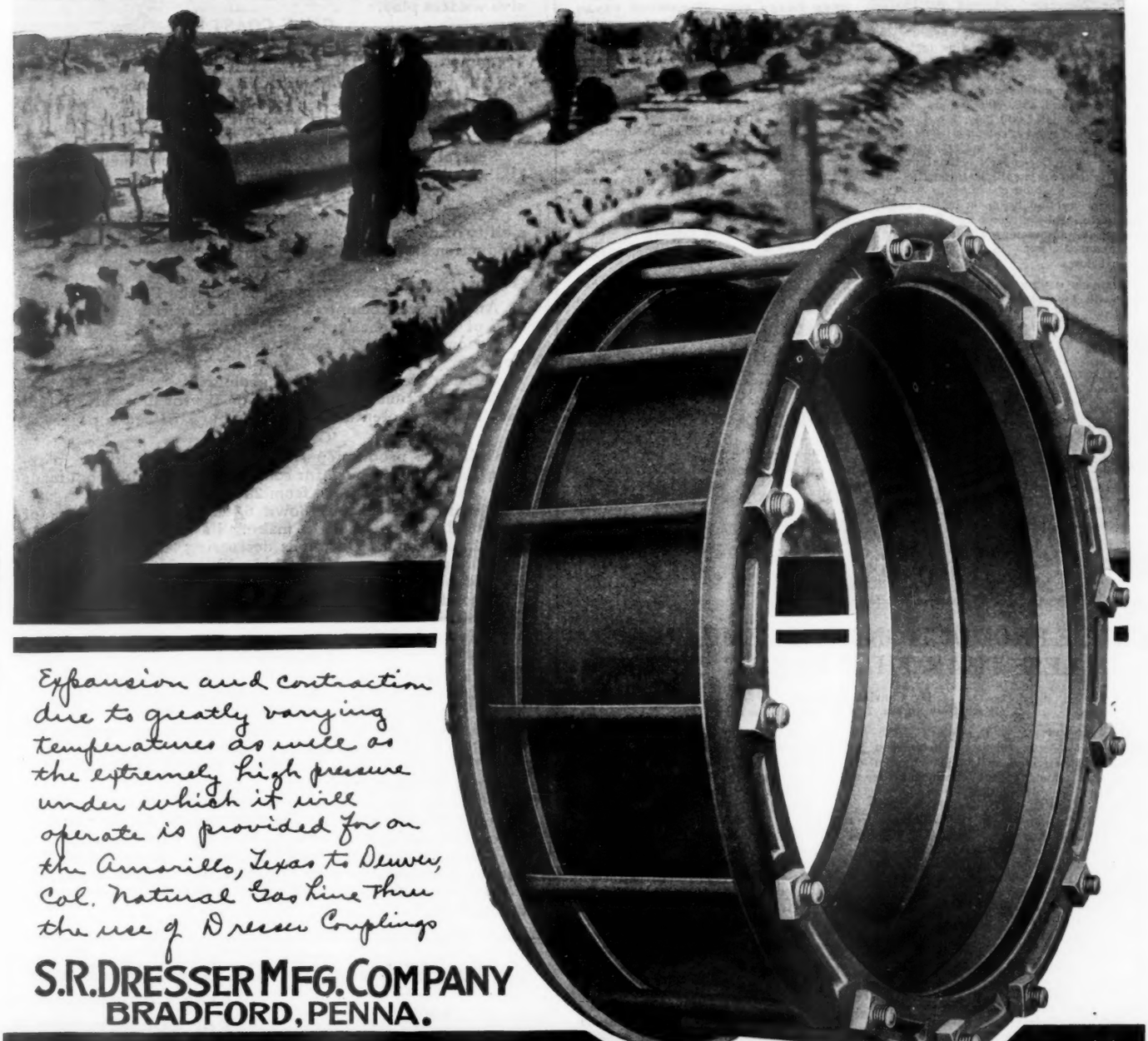
The legislation proposed is deserving of the careful consideration of the industry and of the public.

Two measures have been prepared. One provides for the legalization of voluntary agreements among producers in a pool. The second provides for compulsory enforcement of agreements.

The urgent necessity for agreements is now recognized by a majority of the industry, as well as by the leaders. To those who yet think their individual interests are paramount or different it should need only to be pointed out that the producer who is dependent upon his production alone, without the advantages of an integrated organization, is more deeply interested in avoiding overproduction and its inevitable consequence, depressed markets, than anyone else. This is proved by the experience of such producers in every period of overproduction. They are the chief sufferers.

The public interest, whether regarded as a matter of revenue to state, which shrinks in times of overproduction, or as affected by the greater cost of unnecessary competitive drilling, of constructing unnecessary storage and carrying unneeded stocks of oil subject to interest and insurance charges, is all on the side of conserving the oil in its natural storage underground until needed.

A Cold Fact!



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DRESSER COUPLINGS DOMINATE!

DOMESTIC PRODUCTION IN 1928 FELL OFF ABOUT 6,950,000 BBLS.

By James McIntyre

The combined fields of the United States produced 75,852,700 bbls. in November, a daily average of 2,528,419 bbls., a gain of 8,570 bbls. per day over the October production and a gain of 53,661 bbls. per day over the average in November, 1927.

The total production for the 12 months ending November 30 was 893,105,556 bbls. The production for the 12 months ending November 30, 1927, was 902,635,027 bbls., indicating a decline of 9,529,471 bbls.

It is safe to say that the production for the 12 months ending December 31 will be around 896,900,000 bbls., or approximately 6,951,000 bbls. less than the production for the calendar year 1927. These figures will be subject to minor change when December's official production figures are available later in January.

The production by pools in the Rocky Mountain, Mid-Continent and Gulf Coast States, and a summary which includes all producing divisions in the country are given below:

SUMMARY OF PRODUCING DIVISIONS

Crude Oil Production in the United States for November, 1928

	Daily av. (bbls.)	Month (bbls.)
Oklahoma	735,185	22,055,550
California	663,584	19,907,520
Texas	693,770	20,813,230
Kansas	99,228	2,976,840
Arkansas	82,536	2,476,080
Louisiana	59,503	1,785,090
Montana	10,248	307,440
Wyoming	58,750	1,762,500
Colorado	7,345	220,350
New Mexico	3,270	98,100
Eastern Fields*	115,000	3,450,000
Total November	2,528,419	75,852,700
Total October	2,519,849	78,115,250
Difference	8,570	2,262,550

*Estimated.

MID-CONTINENT FIELDS

	Daily av. (bbls.)	Month (bbls.)
Kansas	99,228	2,976,840
Oklahoma	735,185	22,055,550
North Texas	93,163	2,794,890
Central Texas	48,790	1,463,700
West Texas	323,894	9,716,950
Panhandle of Texas	62,857	1,885,710
East Central Texas	21,927	657,810
Arkansas	82,536	2,476,080
North Louisiana	38,780	1,163,400
Total November	1,506,360	45,190,930
Total October	1,540,720	47,762,729
Difference	34,360	2,571,799

GULF COAST AND SOUTHWEST TEXAS

	Daily av. (bbls.)	Month (bbls.)
Gulf Coast (Tex.-La.)	133,752	4,012,560
Southwest Texas	30,110	903,300
Total November	163,862	4,915,860
Total October	152,836	4,738,005
Difference	11,026	177,855

OKLAHOMA

Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
Washington County	5,533	165,990
Nowata County	5,333	159,990
Rogers County	2,163	64,890
Osage and Eastern Kay Counties—		
Burbank	26,833	804,990
Osage, outside Burbank	24,898	746,940
Total	51,731	1,551,930
Tulsa and Wagoner Counties—		
Bird Creek, Owasso, etc.	3,723	111,690
Red Fork, Sand Springs, Turkey Mountain and Bruner	1,847	55,410
Bilbxy, Leonard, Jenks	1,787	53,610
Broken Arrow, Coweta	1,085	32,550
Total	8,442	253,260
Okmulgee and Muskogee Counties—		
Mounds and Beggs	6,348	190,440
Bald Hill and Haskell	3,257	97,710
Morris, Boynton, Cole	2,094	62,820
Okmulgee	2,521	75,630
Tiger Flats and Schulter	1,056	31,680
Total	15,276	458,280
Okmulgee, Okfuskee, Seminole and Pottawattomie Counties—		
Seminole City	42,799	1,283,970
Bowlegs	48,505	1,455,150
Little River	108,712	3,261,360
Earlsboro	76,507	2,295,210
Searight	10,557	316,710
Mission	798	23,940
Maud	3,985	119,550
Total Seminole	291,863	8,755,890

(Continued on Page 144)

CRUDE PRODUCTION IN NOVEMBER LESS THAN THAT DURING OCTOBER

By Charles E. Kern

Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Dec. 31.—According to reports received by the Bureau of Mines, Department of Commerce, from companies which operate gathering or lead lines, the production of crude petroleum in the United States during November, 1928, amounted to 75,761,000 bbls., a daily average of 2,525,000 bbls. This represents a decrease in daily average of 45,000 bbls. from the October peak. With the notable exception of California, nearly all the producing states recorded decreased output in November. Production in California increased approximately 37,000 bbls. per day over October. This being due mainly to the completion during the month of large wells at Santa Fe Springs, Elwood, and Long Beach. The flush producing areas of Oklahoma were unable to maintain their October pace and, in consequence, the output of the State fell off materially. Most of the producing districts of Texas, particularly West Texas, declined in November, when the daily average output for the State was 703,000 bbls., as compared with 733,000 bbls. the previous month.

Decline in Stocks

The decreased output of crude petroleum east of California and a continued brisk demand for high gravity crude caused a material withdrawal in tank farm stocks. However, a large part of this decrease was merely transferred to refineries so the total decline in crude stocks east of California was only 390,000 bbls. The new flush output in California was well absorbed and light stocks again decreased, although heavy stocks again increased.

The consumption of all the important refined products, except fuel oil, fell off in November and total stocks of all oils were increased by 1,713,000 bbls., the largest increase since April, 1928. The daily average throughput of crude petroleum at refineries in November was practically at a standstill, with an increase in the use of domestic crude petroleum being nearly compensated by decreased runs of foreign crude petroleum as expected. The indicated domestic demand for gasoline fell off materially and for the month totaled 26,222,000 bbls., a daily average of 874,000 bbls. The latter represents a decrease from October of 11 per cent but is 7 per cent above November, 1927. Daily average production was practically the same as in October. Exports were higher, but stocks increased materially for the first time in many months. Total stocks of gasoline on November 30, amounted to 29,075,000 bbls., which represents 28 days' supply as compared with 24 days' supply on hand the previous month and 32 days' supply on hand a year ago.

Kerosene and Lubs

The statistics of kerosene and lubricants were similar to gasoline, with increased exports and decreased domestic demand. Wax stocks continued to increase as exports remained materially below the average of the past year.

The refinery data of this report were compiled from schedules of 338 refineries, which had an aggregate daily crude oil capacity of 3,171,000 bbls. These refineries operated during November at 81 per cent of their recorded capacity as

(Continued on Page 139)

High Spots in Field News

MISSISSIPPI

Show in Hinds County is interesting operators.

KANSAS

Sedgwick County play is spreading as wildcat flows 20 bbls. hourly.

NORTH TEXAS AND PANHANDLE

Moore County's Armstrong Pool expected to get extensive wildcat play.

GULF COAST

Good extension of Raccoon Bend Pool. Two fair wells completed at East Hackberry.

NORTH LOUISIANA-ARKANSAS

Skelly Oil Co. gets big Champagnolle gasser. Ohio Oil Co. has good producer in eastern extension.

NEW MEXICO

Several failures reported in southeastern New Mexico. Utah well drilled deeper still shows saturation.

SOUTHWEST TEXAS

Two-mile extension to the Joe Bruner Field suggests possibility of new pool, that may rival old Luling Field but with production slower and lasting longer.

WEST TEXAS

Extensions in the Yates and Hendricks Pools.

Another well completed in the Leck area, making 1,000 bbls. of fluid, 10 per cent water.

Texon Co.'s world record deep well increasing production.

O'Brien area still puzzling geologists.

New proration figures for Hendricks for first half of January increase potential 19,214 bbls. but still below peak.

OKLAHOMA

Oklahoma production shows increase, and likely to remain above 700,000 bbls. for some time. St. Louis pool made new peak of 139,178 bbls. from 284 wells.

Oklahoma City well down 6,498 feet is near base of Hunton Lime and thought making its big production from pay 12 feet thick. Output is decreasing slightly, and there is speculation that wells making big production from the Hunton have not been highly productive from the Wilcox.

Second group of drilling wells in the Mission Pool of the Greater Seminole district will probably be started February 1 instead of January 1.

CALIFORNIA

Late completions in Santa Fe Springs include St. Helens Petroleum Co.'s No. 1 Hill, Nordstrum zone, flowing 2,650 bbls.; The Texas Company's No. 5 Foix flowing 2,000 bbls. and 25,000,000 feet of gas from the same zone; Superior Oil Co.'s No. 5 Wardman, making 7,000 bbls., and Ring Petroleum Co.'s No. 1 Santa Fe Springs flowing 3,000 bbls. from the deep Buckbee zone.

The deep Buckbee zone is now thought unlikely to be the factor it was expected but the intermediate Nordstrum zone is regarded as more important. It is not now believed Santa Fe Springs will reach 300,000 bbls. within the time predicted but the Buckbee zone may be productive to 8,000 feet.

State's production to continue upward with temporary fluctuations.

Late Fields

KANSAS

In McPherson County, the McPherson Oil & Gas Co.'s No. 1 Wedel, C SW, Section 12-20-2w, had chat from 2,972-76 feet with 3,000,000 feet of gas and a show of oil. The well is drilling ahead at 2,978 feet.

CALIFORNIA

LOS ANGELES, Calif., Jan. 1.—St. Helens Petroleum Co. finished No. 1 Hill, in the Nordstrum zone at Santa Fe Springs flowing 2,650 bbls. daily from 5,037 feet. The Texas Company's No. 5 Foix, another Nordstrum completion, came in flowing 2,000 bbls. of oil and 25,000,000 feet of gas daily from 5,403 feet. Superior Oil Co. brought in No. 5 Wardman doing 7,000 bbls. daily from

(Continued on Page 143)

Oil Operators Thank Texas Commissioners For Conservation Aid

DALLAS, Tex., Dec. 29.—Endorsing the Texas Railroad Commission for its efforts towards conservation in the oil industry in Texas, a resolution was passed at a meeting of the Board of Directors of the Texas division of the Mid-Continent Oil & Gas Association held in the association's offices here expressing the association's thanks.

Only a few of the board members were unable to attend the session. Most of the meeting time was consumed in the discussion of routine business and conservation problems. The following resolution was mailed to the Railroad Commission:

At a meeting of the Board of Directors of the Texas Division of the Mid-Continent Oil & Gas Association, held in Dal-

(Continued on Page 143)

Wildcat Campaign in Moore County

Appearance of Water in Two Armstrong Pool Wells Not Thought Serious. Lipscomb County Getting Attention

By James H. Dameron
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Dec. 31.—Moore County in the Panhandle loomed as the brightest spot in North Texas as Ranger and Wichita Falls districts fell shy of lively news due to the holiday shutdown.

While water has appeared in two of the wells in the Armstrong Pool of Moore County it is not considered serious and that section of Moore County is expected to be the starting of an extensive wildcat campaign in 1929. Skelly Oil Co.'s No. 1 Armstrong and Byrd made considerable water after drilling the plug and only 25 bbls. of oil. The well is being plugged back.

Skelly company's No. 3 on that lease, the record well of the county, is making 1,930 bbls. of oil and 250 bbls. of water. No. 5 was drilled to a total depth of 3,168 feet and swabbed and flowed 485 bbls. of pipe line oil daily, but is being plugged back to 3,155 feet as a precaution against water intrusion. Skelly company's No. 3 is making 200 bbls. of pipe line oil daily while cleaning up a fishing job.

One well was completed in the new pool by the Phillips Petroleum Co. That company's No. 1 J. T. Sneed (James F. Bazemore Survey) was completed as a 310-bbl. producer. Barnsdall Oil Co.'s wildcat test on north of the Armstrong Pool is in an incomplete stage and making around 60 bbls. daily.

Lipscomb County

Lipscomb County came in for some attention when Ruby Oil Co.'s No. 1 Jones found a showing of oil at 4,433 feet. The formation at that depth was described as brown sandy lime. There is 1,500 feet of water in the hole which is coming through the 6-inch casing and the well has been shut down to await arrival of 5-inch casing to make a test.

Panhandle production fell off 2,670 bbls. during the week when every county except Potter County, which marked time, registered declines in daily average. Gray and Hutchinson Counties each reported declines of approximately 1,000 bbls. to contribute the biggest part of the loss. Moore County registered a decline of around 600 bbls.

Prairie Oil & Gas Co.'s No. 1 Bryson in Jack County was one of the most important wells in the Wichita Falls district. It is in the recently discovered Bryson area, which apparently will be extensively drilled. At 3,095 to 3,102 feet the well was flowing and swabbing 351 bbls. daily. It was deepened 10 feet and is now making 254 bbls. natural.

Southeastern Wichita

Two more good wells were completed in the new pay in southeastern Wichita County. Holbrook and Wood's No. 27 Kemp and Kempner made 518 bbls. from 1,467-87 feet and Staley and Wynne's No. 8 Kemp and Kempner was a 548-bbl. well at 1,462-88 feet. United Producers Co. is completing a good well in No. 6 Hodges which is swabbing and flowing 575 bbls. daily from sand at 1,466½-80 feet.

Simpson Fell Oil Co. completed a good shallow gas well in No. 3 Wall in Grayson County when the well made 4,207,000 feet of gas at 870-81 feet with 305 pounds rock pressure. An unusual producer from old Cooke County territory at this life of the area was Kewanee Oil & Gas Co.'s No. 4 Timmis A which made 156 bbls. at 1,408 feet.

New production in Shackelford County was the outstanding development in the Ranger district and as a result the district's daily showed a 725-bbl. increase. Three of the new wells were in the Cook Ranch Pool. Despite new production in Wichita nd Wilbarger Counties the Wichita Falls district showed a decline of 152 bbls.

NORTH TEXAS

Estimated Daily Average Production for the Week Ending December 29

	Bbls.
Panhandle District—	
Carson County	5,675
Gray County	21,780
Hutchinson County	28,140
Moore County	2,365
Potter County	20
Wheeler County	715
Total this week	58,695
Total last week	61,365
Decrease	2,670
Wichita Falls District—	
Archer County	18,407
Baylor County	81
Clay County	483
Cooke County	2,144
Jack County	1,737
Montague County	7,487
Throckmorton County	778
Wilbarger County	30,429
Young County	7,980
Wichita County	28,760
Total this week	98,286
Total last week	98,438
Decrease	152
Ranger District—	
Brown County	9,642
Callahan County	3,615
Coleman County	3,851
Comanche County	1,217
Palo Pinto County	400
Ranger	5,710
Shackelford County	11,217
Stephens County	7,431
Total this week	43,083
Total last week	42,358
Increase	725
Grand total this week	200,064
Grand total last week	202,161
Decrease	2,097

PANHANDLE COMPLETIONS

Week Ended December 29

Gray County

Gulf Production Co.'s No. 1 Saunders, 990 feet north and 330 feet east of SW cor. Section 3, Block 1, A.C.H.&B. Survey, made 510 bbls. from granite wash at a total depth of 2,550 feet.

Hutchinson County

Phillips Petroleum Corp.'s No. 19 J. J. Perkins, 990 feet south and 330 feet east of NW cor. Section of west 240 acres of south 320 acres, Section 1, Block X02, H.&O.B. Survey, was shot with 110 quarts at 2,959-88 feet and made a 50-bbl. well.

Moore County

Phillips Petroleum Corp.'s No. 1 Sneed James, 330 feet north and west of SW cor. F. Bazemore Survey, was drilled to a total depth of 3,192 feet, and swabbed 310 bbls. after having been shot with 80 quarts at 3,148-80 feet.

WICHITA COMPLETIONS

Week Ended December 29

Archer County

C. E. Hitchfield and others' No. 1 Gant was dry and abandoned at 1,925 feet. Jim Turner and others' No. 3 Lyles made 120 bbls. at 1,694-97½ feet. Continental & Republic Production Co.'s No. 6 Oldham made 11 bbls. at 1,051-63 feet. F. C. Grebin and others' No. 1 Alexander made 23 bbls. at 1,419-28 feet. Madden & Hunt's No. 13 Richardson made 25 bbls. at 1,306-11 feet. The Texas Company's No. 23 Hill made 19 bbls. at 1,414-25 feet.

Cooke County

Kewanee Oil & Gas Co.'s No. 4 Timmis-A made 156 bbls. at 1,357-1,408 feet.

Grayson County

Simpson-Fell Oil Co.'s No. 3 Wall made 4,207,000 feet of gas at 870-881 feet with 305 pounds rock pressure.

Montague County

Bridwell Oil Co.'s No. 8 Salmon-A was dry and abandoned at 1,613 feet. Continental Oil Co.'s No. 5 Jones-A made 14 bbls. at 770-86 feet.

Jack County

Lindenfeller's No. 1 Rudolph was dry and abandoned at 840 feet.

Young County

Holbrook & Wood's No. 6 Watson was dry and abandoned at 755 feet. Meredith's No. 1 Simmons was dry and abandoned at 585 feet. Rhodes and others' No. 1 Eichelberger was dry and abandoned at 618 feet. Riggs and others' No. 9 Sweet made 15 bbls. at 552-57 feet. Strachan's No. 1 Dunan was dry and abandoned at 598 feet.

Wichita County

Coleman & Coppack's No. 18 Kemp & Kempner made 90 bbls. at 1,472-95 feet. W. H. Hamon's No. 13 McCarty-C made 35 bbls. at 1,326-65 feet. Holbrook & Woods' No. 27 Kemp & Kempner made 518 bbls. at 1,467-87 feet. Mrs. R. A. Laing's No. 28 McCarty made 25 bbls. at 1,354-70 feet. Mrs. R. A. Laing's No. 9 McCarty was dry and abandoned at 575 feet. Staley & Wynne's No. 8 Kemp & Kempner made 548 bbls. at 1,462-88 feet. United Production Co.'s No. 5 Hodges-A made 10 bbls. at 1,483-85 feet. Its No. 2-B Hodge made 50 bbls. at 1,482-90 feet.

Winkler County

Atlantic Oil Producing Co.'s No. 7-G Hendricks, located 440 feet from north and 1,320 feet from west lines of Section 46, Block 26, Public School Land, topped the lime at 2,278 feet, topped the pay at 2,465 feet, was drilled to a total depth of 2,625 feet and had an initial production of 185 bbls., 5 per cent water. Atlantic Oil Producing Co.'s No. 2 Leck, located 2,310 feet from south and west lines of Section 3, Block 74, topped the lime at 2,668 feet, topped the pay at 3,143 feet, was drilled to a total depth of 3,168 feet, made 60,000,000 feet of gas and had an initial production of 1,000 bbls. daily, 10 per cent water. Cranfill Brothers and Pickrell's No. 1 Hutchins, located 2,310 feet from south and 330 feet from west of Section 47, Block 26, topped the lime at 2,280 feet, had an oil show at 2,885 feet, was drilled to a total depth of 3,252 feet, plugged back to 2,980 feet, shot with 150 quarts at 2,750-2,808 feet and made 130 bbls. Gulf Production Co.'s No. 1 Ida Hendricks flowed 410 bbls. at 2,880 feet. Pure Oil Co.'s No. 12-C Hendricks, located 330 feet south and 990 feet east of Section 45, Block 26, topped the lime at 2,174 feet, topped the pay at 2,546 feet, was drilled to a total depth of 2,559 feet and had an initial production of 30,000 bbls. daily. Pure Oil Co.'s No. 13-C Hendricks, located 330 feet south and 1,650 feet east of NW cor. Section 4, Block 26, topped the lime at 2,201 feet, topped the pay at 2,584 feet, was drilled to a total depth of 2,604 feet and had an initial production of 15,000 bbls. daily, 7½ per cent water. Shell Petroleum Corp.'s No. 6-F Hendricks, located 2,200 feet south and 2,310 feet west of Section 46, Block 26, topped the lime at 2,260 feet, encountered a gas show at 2,430 feet, topped the pay at 2,665 feet, was drilled to a total depth at 3,050 feet and had an initial production of 25 bbls. hourly, 13 per cent water. Southern Crude Oil Producing Co.'s No. 2 Hendricks T-88-L, located 2,310 feet from north and 330 from east of Section 4, Block B-12, topped the lime at 2,503 feet and had an initial production of 155 bbls. hourly at 2,789-2,920 feet. Its No. 9 Hendricks T-88-M, located 990 feet north and east of Section 33, Block 26, topped the lime at 2,353 feet, and had an initial production of 150 bbls. hourly

(Continued on Page 139)

WILDCAT OPERATIONS IN TEXAS PANHANDLE

For week ended December 29

Company, Well, Farm, Name, Section and Block—	Remarks—
CARSON COUNTY	
Denson et als' No. 1 W. E. Cobb, 930 ft. from N line, 280 ft. from E line, W½ NW, Sec. 184, Blk. 2, I.&G.N. Sur.	S.D. 725 ft.
Duncan & Reiger's No. 1 J. B. Hodges, 330 ft. from E line and 330 ft. from S line W½ NW, Sec. 112, Blk. 7, I.&G.N. Sur.	Rig on ground.
Holmes et als' No. 1 Quinn, 330 ft. from S and 330 ft. from E line SW, Sec. 7, Blk. 9, I.&G.N. Sur.	Rig.
Magnolia Pet. Co.'s No. 6 fee No. 244, 660 ft. from N line and 660 ft. from E line E½, Sec. 91, Blk. 4, I.&G.N.R.R. Sur.	Drlg. 2,504 ft.
Morris et als' No. 1 Barnard, NW cor. SW SE, Sec. 44	Fishing 880 ft.
Navajo Oil Co.'s No. 2 Poling, 660 ft. from W and 330 ft. from N lines, N 30 ac. SW, Sec. 22, Blk. X-2, T.T.R.R. Sur.	S.D. 2,610 ft.
Reynolds et als' No. 1 E. Cooper, 330 ft. from S line and 330 ft. from E line NW, Sec. 5, Blk. 9, I.&G. N.R.R. Sur.	Drlg. 400 ft.
Spartan Oil Co.'s No. 1 S. Bednorz, NW cor. E½ NW, Sec. 202, Blk. 3, I.&G.N. Sur.	Rig burned 2,165 ft. and S.D.
Skelly Oil Co.'s No. 10 Schafer, 1,320 ft. from W line and 330 ft. from S line of N½, Sec. 188, Blk. 3, I.&G.N.R.R. Sur.	Run 8-in. casing 2,085 ft.
Stubblefield et als' No. 1 Cooper, 340 ft. N and 330 ft. W line SE, Sec. 5, Blk. 9	S.D. 2,410 ft.
Travis et als' No. 1 D. A. Harrell, C NE NE, Sec. 162, Blk. 7, I.&G.N. Sur.	Fish. 2,510 ft.
Ware et als' No. 1 Ware, 990 ft. S and 400 ft. E NW cor. Sec. 18, Blk. 3, A.B.&M. Sur.	Drlg. 1,595 ft.
CASTRO COUNTY	
Colorado O. & R. Co.'s No. 1 M. Slemmons, SW cor. Sec. 73, Blk. M-17, B.S.&F. Sur.	Rig blown down.
Mystery Oil Co.'s No. 1 J. I. Crum, SE cor. NE, Sec. 333, Blk. M-6, S.K.&K. Sur.	S.D. 510 ft. for csg.
CHILDRESS COUNTY	
C. L. Sloane et als' No. 1 B. P. Smith, Sur. 49, F. P. Knott lands	S.D. 4,005 ft.
The Texas Co.'s No. 1 Smith, 100 ft. each way from NW cor. Sec. 174, Blk. H, W.&N.W. Sur.	Hole full sulphur wtr. 3,985 ft; S.D. 4,605 ft.
COCHRAN COUNTY	
Clark & Melat's No. 1 C. C. Slaughter, 1,650 ft. E and 660 ft. S of NW tract, League 118, Knox County School land	Rig blown down.
Marland Prod. Co.'s No. 1 C. C. Slaughter, 330 ft. from S and W lines, Carson County School land, Tr. 130	Fish. 1,550 ft.
COTTLE COUNTY	
Explin. Co.'s No. 1 Richards	Drlg. 1,610 ft.
Explin. Co.'s No. 4 Matador Land & Cattle Co., C, Sec. 46, J. H. Stephens Sur.	Drlg. 2,750 ft.
Skelly Oil Co.'s No. 1 J. H. Cannon	H.F.W. 3,558 ft.; drlg. 3,807 ft.
Sun Oil Co.'s No. 1 T. B. Yarborough, 485 ft. S and 2,460 ft. E NW cor. Sec. 551, Blk. H, W.&N.W. Sur.	S.D. 3,400 ft.
GRAY COUNTY	
B. S. Arnold's No. 1 J. E. Mingale, cen. east 160 acres, Sec. 212, Blk. B-2, H.&G.N. Sur.	S.D. 1,412 ft.
Arnold & Howell's No. 1 Turnex, C SW, Sec. 111, Blk. B-2	S.D. 2,224 ft. for pipe.
Camel Oil Co.'s No. 1 Harrah-B, 330 ft. each way from NW cor. NE, Sec. 150, Blk. 3, I.&G.N. Sur.	Cellar.

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Extensions in Yates and Hendricks

New Well in Leck Area. World's Deepest Well Still Increasing Its Production. New Proration Figures for Hendricks

By James H. Dameron
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Dec. 31.—Extensions in the Yates and Hendricks Pools featured the week's developments of those areas, another well in the Leck area, increase in production of the Texon company's deep record well, developments in the O'Brien area of southern Winkler County and new proration figures were the outstanding developments over the holidays.

While Gulf Production Co.'s No. 13 Smith, Tract B, Section 22, Block 194, extended production of Yates about one-half mile to the south with a small well a few days ago, a worth-while extension was not made until the well was deepened and started off flowing 400 bbls. per hour. It had a show of oil and gas at 1,370-75 feet and bailed 10 bbls. per hour at 1,400 feet. At 1,485-90 feet it reached a soft spot and started off flowing at an estimated rate of 9,600 bbls. daily. The well has been shut in for storage.

Hendricks Outpost Well

Gulf company completed an outpost well on the central western flank of Hendricks when No. 1 Ida Hendricks, SE NW Section 44, Block 26, was completed making 400 bbls. from pay at 2,840-85 feet. Gulf company has made a location for another well north of the new producer. It is one of the best wells in that particular lean spot of Hendricks.

Southern Crude Co.'s No. 1 Hendricks T-88-Q, SW cor. N half Section 27, Block 26, in the northeast edge of Hendricks, is making another extension for the pool. It is flowing at the rate of 38 bbls. per hour from 2,631 feet with no water showing.

New Well in Leck Area

In the Leck area Atlantic company and Kessler and Logan's No. 2 Leck, NE cor. SW Section 3, Block 74, is making 1,000 bbls. of fluid, 10 per cent water, from a total depth of 3,168 feet and was shut in for orders. Shell Pipe Line Corp. has made arrangements with the Humble Pipe Line Co. to run oil from the Llano area northeast of Leck. Shell corporation is building a 4-inch line from Llano to the Leck area and will deliver oil to the Humble company at that point. Shell Petroleum Corp. and Llano Oil Co.'s wells in that area have been shut in several months because no pipe line outlet was available. The production of the wells was small.

O'Brien Area

The O'Brien area in southern Winkler County is still provoking considerable geological thought. Barnsdall Oil Corp.'s No. 1 Morton, SW cor. Section 26, Block B-12, northeast offset to the discovery well of the pool, encountered half a bailer of sulphur water per hour at 3,128 feet and is fishing for the bailer at 3,129 feet.

The discovery well is flowing around 600 bbls. daily from a total depth of 2,975 feet. A quarter of a mile north of the discovery well Wentz Oil Corp.'s No. 1 Morton, Section 27, Block 26, has a hole full of oil from 2,842-83 feet and has been drilled to a total depth of 2,982 feet and is to be deepened.

Simms and Southwest company's No. 1 Sealy, Section 50, Block F, and one-half mile south of the discovery well, topped salt at 2,090 feet. The discovery well had the salt at 2,050 feet. The several wells that are drilling in the O'Brien area have presented one geological puzzle after another. It is difficult to determine what direction the trend will be. At first it was believed to be north and northwest and now some believe it will possibly be to the southwest.

In the extension territory opened by Mining & Engineering Co.'s No. 1 in Section 10, Block B-12, Humble Oil & Refining Co.'s No. 1 Hendricks-C, Lease 2, is giving the west side of Section 10 and the east side of Section 9 a better outlook. The discovery well in this territory topped the lime at 2,607 feet and the Humble company's well, one-half mile diagonally northwest, found the lime at 2,415 feet.

New Proration Figures

New proration figures for the first half of January credit Hendricks with an increase of 19,244 bbls. in potential production. The new potential figures released by the umpire show the field to have a potential production of 2,655,707 bbls. This, however, is below the peak.

Twenty-one new wells were added during the past 15 days and 116 wells were gauged, including the new producers. There are 209 units on production with 468 wells. The proration allowance for unit production is 419 bbls. per unit.

No new developments have transpired in the legal attack on the Hendricks proration plan and thus far nothing unusual has happened in the field. It is expected that the Cranfill and Murchison company and T. P. Lee's suit for a permanent injunction will be given a hearing soon after the first of the year.

Runs and Shipments

During the 10-day period from December 10 to 20 tank car shipments, pipe line runs and shipments to refineries of Winkler County crude totaled 1,187,351 bbls. The tank car shipments amounted to 44,945 bbls. daily, runs to refineries totaled 10,658 bbls. daily and pipe line runs were 63,131 bbls. daily.

The California Co. purchased from the F. H. E. Oil Co. a lease in southern Howard County for a reported consideration of $400,000. The lease is a 160-acre lease with four shallow producers making around 125 bbls. The lease is described as the N half of the NE Section 156, Block 29, and the S half of the SE Section 137, Block 29. The lease is near production from the lime zones in the Roberts Pool.

Deepest Well Increases Output

Texon Oil & Land Co.'s world's record deep pay producer continues to improve in performance and consequently in importance. The well's production has climbed to 1,302 bbls. daily. Its production since the deep pay at 8,520 feet was encountered on December 2 has steadily climbed from 40 bbls. daily to its present gauge.

This well has more than 2,000 feet of open hole and the steady increase in production is beginning to cause some concern as to whether or not the hole will stand up. As it was being drilled the hole stood up remarkably.

Preparations are being made by the Big Lake Oil Co. and the Texon Oil & Land Co. to explore the deep pay zone further. It is reported the Big Lake Co. plans bringing an experienced drilling crew from California to carry on its deep drilling operations. The Texon Co. is likewise planning to drill its second well more speedily. According to reports from some quarters the deep holes in Big Lake will be drilled with rotary tools to around 4,000 feet where 10-inch will be cemented and then completed with standard tools.

WILDCAT OPERATIONS IN WEST TEXAS

Week Ended December 29

ANDREWS COUNTY

Company, farm and location—	Remarks—
Deep Rock Oil Co.'s No. 1 Hostetler, 2,310 ft. N and W of SE cor. Sec. 20, Blk. A-46	Shut down 1,450 ft.; hole full water 1,390 ft.

BORDEN COUNTY

Condor Oil Co.'s No. 1 E. A. Hall, 1,650 ft. S and W of NE cor. Sec. 5, Blk. 32, Twp. 3n, T.&P. Sur.	Top salt 1,235 ft.; set 6-in. casing 1,805 ft.; drlg. 3,555 ft.
Teas & Wheeler's No. 1 Long, 1,320 ft. N and E of Sec. 27, Blk. 30, T.&P. Sur.	Location.

BREWSTER COUNTY

E. W. Bateman et al's No. 1 Nevill, 2,000 ft. from S line and 1,000 ft. from W line of Sec. 64, Blk. 13, G.H.& S.A.R.R. Sur.	Drlg. 1,110 ft.
Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor. Sec. 45, Blk. G-15, G.C.&S.F.	Rigged up and shut down.
Cowden & Bowser's No. 1-A Jackson & Harmon, Sec. 1, Blk. 331, T.C.R.R. Sur.	Set 8-in. 1,530 ft.; shut down 2,000 ft.
Forrest Oil Co.'s No. 1 Skinner, C SW SE Sec. 100, Blk. 2, G.C.&S.F. Sur.	Shut down 1,145 ft.
J. M. Hickey's No. 1 Jackson & Harmon, NE cor. Sec. 182, Blk. 9, G.H.&S.A. Sur.	Shut down 1,150 ft.
Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 mi. S of Alpine	Shut down 1,740 ft.
Williams and others' No. 1 Poncey, 459 ft. S and 1,062 ft. E Sec. 26, Blk. 214, T.&St.L.R.R. Co.	Shut down 515 ft.

COKE COUNTY

Cates & Dennis' No. 1 Mimms, 2,500 ft. S and 330 ft. E of NW cor. Sec. 47, Blk. 4, T.&P. Sur.	Shut down 1,465 ft.
Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 396, Blk. 1-A, H.&T.C. Sur., elev. 2,750 ft.	Shut down 2,860 ft.
Louisiana O. & R. Co.'s No. 1 Powers, 745 ft. S and 2,310 ft. E of NW cor. Sec. 156, Blk. 2	Hole full water 2,980 ft.; underreaming casing 3,373 ft.; shut down 3,410 ft.
Mid-Kansas Oil Co.'s No. 1 W. E. Lackey, 330 ft. N and E of SW cor. Sec. 272, Blk. 1-A, H.&T.C.	Underreaming 2,765 ft.

CONCHO COUNTY

Exploration Co.'s No. 2 Hartgrove, 906 ft. S and 985 ft. E of NW cor. Johann Scheuch Sur. No. 240	Rig.
Loyd Jones Co.'s No. 1 Jones 420 ft. S and 15 ft. E of NW cor. John G. Reh Sur. No. 1,878	Shut down 150 ft.
Posey's No. 1 Elvidge, C NW Sec. 39, H.&T.C.R.R. Sur.	Shut down 300 ft.

CRANE COUNTY

Duffey and others' No. 4 Cowden, 1,320 ft. S and 440 ft. W of Sec. 18, Blk. X, C.C.S.D.&R.G.N.G.	Location.
Gulf Prod. Co.'s No. 7 Crier-McElroy, 330 ft. N and E of SW cor. Sec. 196, Blk. F, C.C.S.D.&R.G.N.G. Sur.	Drlg. 1,325 ft.
Gulf Prod. Co.'s No. 59 Crier-McElroy, 330 ft. S and E of NW cor. Sec. 195, Blk. F, C.C.S.D.&R.G.N.G. Sur.	Drlg. 1,380 ft.
Gulf Prod. Co.'s No. 6 Waddell, C NW NE Sec. 12, Blk. B-25	Rigging up.

CROCKETT COUNTY

Barbara Oil Co.'s No. 1 Cox, 237 ft. S and 1,190 ft. E of NW cor. R. B. Dickenson Sur.	Show gas 1,000 ft.; shut down 1,290 ft.; flowing water.
W. W. Donnelly & Young's No. 1 Shannon, SW SW SE Sec. 42, Blk. BB, T.C.R.R. Sur.	Cleaning out 1,719 ft.
W. W. Donnelly & Young's No. 1 Middlebuster, C Sec. 11, Blk. 9, D.&S.E. Sur.	7,000,000 ft. gas at 1,663 ft.; shut down 1,690 ft.; small oil show.
Moncrief, Zoch et al's No. 1 J. H. Tippett, 330 ft. from C NE line Sec. 45, Blk. 31, H.&T.C.R.R. Sur., but in Sec. 1, Blk. JH	Underreaming 498 ft.
J. D. Wheeler's No. 1 State Land, 744 ft. S and 1,250 ft. E from SE cor. Sec. 73, Blk. 1, I.&G.N.R.R. Sur., but in Vacancy Strip.	Shut down 325 ft.

DAWSON COUNTY

Magnolia Petroleum Co.'s No. 1 W. A. Jetter, C Sec. 1, Blk. 34, Twp. 4n	Top salt 1,650 ft.; set 10-in. casing 1,815 ft.; total depth 3,598 ft.

EL PASO COUNTY

Sillix et al's No. 1 W. D. Malone, Sec. 46, James M. Day Sur.	Set 12½-in. casing 1,010 ft.; shut down 1,010 ft.

(Continued on Page 88)

ESTIMATED DAILY AVERAGE PRODUCTION WEST TEXAS

Week Ended December 29

County—	Wells	Prod.
Crane County	272	37,281
Crockett County	47	2,615
Ector County	2	8
Fisher County	7	821
Glasscock County	18	1,216
Howard County	219	34,393
Jones County	68	6,170
Loving County	9	312
Mitchell County	141	2,630
Pecos County	279	72,598
Reagan County	231	18,106
Runnels County	3	210
Scurry County	5	31
Upton County	273	13,649
Ward County	1	105
Winkler County	488	155,520
Total this week		345,660
Total last week		344,746
Difference		914

WEST TEXAS COMPLETIONS

Fisher County

Cranfill & Reynolds' No. 1 Sharp, located in C NE SW Section 207, B.B.B.& C. Survey, topped the pay at 3,138 feet, was drilled to a total depth of 3,140 feet and had an initial production of 208 bbls. and 40 bbls. of water.

Howard County

F.H.E. Oil Co.'s No. 9-B Roberts, located 1,040 feet from N and 2,310 feet from W lines of Section 137, Block 29, had an initial production of 118 bbls. hourly at 2,927-60 feet. Gulf Production Co.'s No. 4 Clay, located 330 feet from N and 2,310 feet from W line of Section 155, Block 29, was shot with 40 quarts at 1,812-35 feet and had an initial production of 230 bbls. Pure Oil Co.'s No. 7 Cha'k, located 900 feet from S and 330 feet from E lines of Section 125, Block 29, made 175 bbls. at 1,740-54 feet.

Jones County

Cranfill & Reynolds' No. 1 Bickley topped the lime at 2,444 feet, topped the pay at 2,465-67 feet and pumped 75 bbls. Hucony Gas Co.'s No. 1 Thomas is an abandoned location.

Pecos County

Roxana Petroleum Corp.'s No. 3-D Smith, located 330 feet from N line and 330 feet from W line of Section 24, Block 194, G.C.&S.F.RR. Survey, topped the lime at 1,623 feet, topped the pay at 1,640 feet, and was drilled to a total depth of 1,738 feet and had an initial production of 72 bbls. Shell Petroleum Corp.'s No. 1-E Tippett, located 2,310 feet from S and 990 feet from E lines of Section 2, Block 194, made 37 bbls. at 1,225-1,330 feet.

Runnels County

Jones Oil Syndicate's No. 1 Hale, located 212 feet from N and 150 feet from E line of Section 109, was dry and abandoned at 2,250 feet.

Scurry County

Landreth Production Co.'s No. 1 Hillman, located 330 feet from N and E lines

(Continued on Page 141)

From an article by C. O. Willson in
The Oil and Gas Journal, issue of November 15, 1928

"As has been the case for several months, a number of refiners are running considerable fuel oil to storage. Based on today's markets, this fuel oil, if it is suitable for cracking, is worth approximately twice present quotations as raw material in the manufacture of gasoline."

It is *all* suitable for cracking—and it is worth from a third to one-half more, if it is cracked by the Dubbs Process rather than by any other method, because of the greater gasoline yield and lower operating cost

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Oklahoma Production Shows Increase

State Output Seems Destined to Remain Above 700,000 Bbls. for Some Time. St. Louis Pool Makes New Peak

By J. L. Dwyer
Staff Correspondent, Oklahoma Fields

A new peak production for the St. Louis Pool, a lagging interest in the Oklahoma City wildcat of the Indian Territory Illuminating Oil Co., an increase in the daily average output of the State, and some new developments around the west Maud district of Township 8-5, Pottawatomie County, and the New Year started in the Oklahoma fields.

The St. Louis Pool touched a new high owing to the completion of additional wells on the Pure Oil Co.'s Thomas lease, and the deepening of T. B. Slick and the Maud Oil & Gas Co.'s No. 1 Davis in Section 18-7-5. The St. Louis area was hard pushed for pipe line accommodations during the past week, and there were numerous instances of oil "on the ground." This condition was only temporary, however, and there was only a very slight loss of oil reported, as the pumps were able to pick up the oil soon after it was on the ground. The St. Louis Pool produced 139,176 bbls. on Friday of last week from 284 wells, and this constituted the new high.

The Oklahoma fields face the coming year with good prospects of finding themselves in a predicament similar to the past two years unless the drill is curbed. New finds in the deep sand fields of Logan County have improved the prospects of that area, (and they were never poor) while in the Allen deep sand pool, there is a constant worrying regarding the discovery well being thrown open, and the region drilled up. The Sinclair Oil & Gas Co. owns the Wilcox sand discovery well of this pool (No. 2 Amos in Section 7-5-8) and ever since the sand was tapped, the well has been shut in completely. The well started flowing 37 bbls. hourly when the sand was first penetrated, and since it never flowed for a full 24-hour period, little is known of its possibilities. There have been several operators of this region who are inclined to test out the territory, and while the Sinclair company has been strongly in favor of continuing to keep the well shut in, there is a nervous feeling about the area.

Mission Pool

The Mission Pool, west of Bowlegs in the Greater Seminole region, is another spot which may contribute to the swelling output of the State. Although there are several wells in this operation which are running exceptionally low, and these have caused a damper to be placed on the general prospects of the Mission Pool, there is still sufficient territory which looks promising to afford a pool having a peak of 60,000 bbl. per day, and capable of sustaining that production for a good period.

Taken all in all, the outlook of Oklahoma has changed perceptibly during the past five or six weeks, and while at the latter time, it was fully expected that the end of 1928 would see the fields of the State making around 660,000 or possibly 650,000 bbls. daily, they are exceeding that amount by 65,000 bbls., with every prospect of touching an additional 25,000 bbls. within 30 days.

The Oklahoma production is now 722,000 bbls., and with the completion date of the Mission wells rapidly approaching and several small fingers of production reaching out from some of the older pools of the Seminole region, and an occasional Wilcox sand "pimple" being discovered in various directions from the St. Louis Field, there is every reason to believe that the fields of the State can sustain an output above 700,000 bbls. for at least the first half of 1929. This without any oil being considered from the Allen Pool or the Oklahoma City region. Incidentally the decline which the older pools of Greater Seminole have been making seems to have been pretty well checked, and reached a suspension point, while the production of Little River has exceeded all expectations in the matter of longevity. It was thought that the Little River Field especially would experience a rapid drop and go to water, but it has steadied down during the past few weeks.

Oklahoma City Wildcat

The Oklahoma City wildcat well was drilled deeper all this week, and now has reached a total depth of 6,498 feet, and the most important development is that the majority of geologists and paleontologists have reached the conclusion that the well is now near the base of the Hunton lime, and that it has been drilling in that formation from 6,400 feet. The thought that the well is making its big production from a pay streak of 12 feet in thickness, and that this pay was encountered in the Hunton lime does not add to the prospects of the well, for it has been the rule in the oil pools of central Oklahoma that wells which have made big production in the Hunton lime are not highly productive when drilled to the Wilcox horizon. If the Oklahoma City well follows this rule, the prospects of the area may be subjected to a revision. It might be mentioned, however, that good Wilcox sand production is often found on the flanks of the Hunton lime production and there may be good results found in this territory. The Oklahoma City well is decreasing slightly in output and made 5,632 bbls. for the 24 hours ending Monday morning, December 31. The hole is reported caving very badly and making drilling impossible for the time being until the cave is whipped. The owners will continue their efforts to deepen the well until the Wilcox horizon is reached.

The fact that this well is really producing from the Hunton lime is a decided disappointment for the test, as it will throw the position of the Wilcox sand somewhat lower, and it is reported that prior to the finding of the Hunton the formations had been thickening up rather well.

WILDCAT OPERATIONS IN OKLAHOMA

NORTHERN OKLAHOMA

Company, farm and location—	Remarks:
LATTIMER COUNTY	
Limestone Oil & Gas Co.'s No. 1 McMurray, SW cor. SW Sec. 15-5-18	1,000,000 ft. gas 1,695-1,705 ft.
GRANT COUNTY	
Cowden and others' No. 2 Vollmer, CEL NE SW Sec. 22-25-4w	Shut down 5,640 ft.
Lario-Lathrop's No. 1 Cornell, NW cor. NW Sec. 24-28-3w	Drlg. 550 ft.
HARPER COUNTY	
Hoffer Oil Co.'s No. 1 Cooper, NW cor. SE SE Sec. 12-25-22w	Shut down 4,130 ft.
KAY COUNTY	
Geo. L. Miller and others' No. 1 Home, NW cor. SE Sec. 11-24-3	Dry and abandoned at 4,031 ft.
Lario Oil Co.'s No. 1 McKay, NW NE Sec. 14-29-1	Drlg. 3,695 ft.
Wentz Oil Corp.'s No. 1-A Ward, C NW SE SW Sec. 32-27-1e	Rig.
WOODWARD COUNTY	
Otstot Development Co.'s No. 1 Simmons, SE cor. SE Sec. 32-24-17w	Dry and abandoned 1,490 ft.
Sharon Oil Co.'s No. 1 Elmore, SW cor. SW Sec. 25-21-21w	Rig blown down 3,025 ft.
Billy's Oil Co.'s No. 1 Watt, C SE Sec. 9-23-20w	Drlg. 900 ft.
Burgoyne Brothers' No. 1 Merkins, SW cor. SE NE Sec. 15-21-19w	Shut down 1,910 ft.
Farrond and others' No. 1 Johnson, SW cor. SW Sec. 1-23-17w	Underreaming 1,560 ft.
GARFIELD COUNTY	
E. L. Love and others' No. 1 White, SE cor. NW Sec. 9-24-6w	Shut down 4,755 ft.
Marland and Barnsdall's No. 1 Looman, NE SE Sec. 9-20-4w	Dry and abandoned 5,735 ft.
Marland Oil Co.'s No. 1 Miller, SW cor. SW Sec. 12-20-4w	Dry and abandoned 4,575 ft.
NOBLE COUNTY	
Alco Royalty Co.'s No. 1 Waltermire, SE cor. NW Sec. 33-21-1w	Underreaming 2,014 ft.
Marland Oil Co.'s No. 1 Kidd, NW cor. SW Sec. 32-20-1w	Shut down at 5,290 ft.; plugging back to show oil 1,836 ft.
KINGFISHER COUNTY	
McKinney & Crawford's No. 1 Sturgeon, NE cor. SW Sec. 27-16-6w	Underreaming 4,845 ft.
LOGAN COUNTY	
Haley & Smith's No. 1 Guier, SE cor. SW Sec. 33-18-3w	Shut down 3,970 ft.
J. L. Donahoe's No. 2 fee, SW cor. NW SE Sec. 21-18-2w	Shut down 6,022 ft.
BLAINE COUNTY	
Lowen and others' No. 1 Unknown, NW cor. SW NW Sec. 27-16-11w	Spudded and shut down; renewing leases.
W. J. Donnelly, trustee's No. 1 Dickens, NE cor. SE Sec. 26-15-12w	Shut down 4,360 ft.
Ragland and others' No. 1 Unknown, C NW SW Sec. 13-19-10w	Rig.
LINCOLN COUNTY	
Phillips Pet. Co.'s No. 1 Stephens, SE cor. NW Sec. 29-12-3	Rig.
Morgan & Flynn's No. 1 Finlay, SW cor. SW Sec. 19-16-6	Location.
McLAIN COUNTY	
Empire Oil & Ref. Co.'s No. 1 Bonner, SE cor. NW NW Sec. 29-5-3	Drlg. 4,050 ft.
MUSKOGEE COUNTY	
Elk Drilling Co.'s No. 1 Jones, SW cor. SW Sec. 34-13-17	Shut down 400 ft.
L. T. Haney's No. 1 Mitchell, SE cor. NW SE Sec. 33-13-18	Shut down 2,290 ft.
J. L. Slusher's No. 1 Nave, NE cor. SW NW Sec. 20-15-20	Shut down 775 ft.
HUGHES COUNTY	
Bauer and others' No. 1 Penn, NW cor. SW NE Sec. 1-8-10	Dry and abandoned 4,255 ft.
E. W. Whitney and others' No. 1 Moore, SE cor. SW Sec. 17-5-9	Shut down 3,000 ft.
Pure Oil Co.'s No. 1 Fixico, NE cor. SW Sec. 18-8-9	Dry and abandoned 4,500 ft.
Howard Petroleum Co.'s No. 1 Gilbert, NW cor. SE Sec. 25-8-10	Drlg. 3,943 ft.
Gypsy Oil Co.'s No. 1 McGirt, NE cor. NW SW Sec. 21-6-8	Sand 3,310-30 ft., corrected, hole full water.
T. B. Slick, Inc.'s No. 1 Epperly, NW cor. NE NW Sec. 32-6-8	Dry in Wilcox, 4,655 ft., plugging back.

(Continued on Page 106)

An interesting development for the Oklahoma City region is that the Indian Territory Illuminating Oil Co. and Foster Petroleum Co.'s No. 1 Trosper, C NE SW, Section 13-11-3w, has cored a sand at 3,887 feet where a show of oil was found. This showing is believed to correlate with a showing found at a similar depth in the same owners' No. 1 fee, the first well drilled at Oklahoma City.

There have been some efforts made through the agencies of Umpire Ray M. Collins to limit drilling at Oklahoma City, and while no definite results have been evident, it is possible that only one or two wells will be drilled in this region. The discovery that the first well is producing from the Hunton lime has not tended to start any new drilling activity.

Maud Area

In the Greater Seminole area, the Maud district in Township 8-5 is the most interesting spot. Work in this area is picking up again after the holiday shutdown, and in the matter of production the Greater Seminole area shows an increase in the daily average production for the first time in many weeks. The Greater Seminole Field had a daily average of 282,640 bbls. for the week ending Saturday, December 29, an increase of 8,110 bbls. over the previous week. The majority of this increase was caused by the completion of wells in the Maud district. The production of the field by pools on Friday, December 28, follows:

Pool—	Wells	Prodn. bbls.
Little River	318	84,656
Maud	23	26,612
Mission	12	769
Bowlegs	313	43,785
Earlsboro	293	72,797
Seminole	283	41,164
Searight	67	9,164
Total	1,309	278,947

There have been several significant developments in the 8-5 area during the past week. The Gypsy Oil Co.'s No. 1 Coker, NE cor. SE Section 10-8-5, had the Simpson sand at 4,238-63 feet and flowed 594 bbls. The well will be drilled deeper but is now shut down for additional tankage and pipe line accommodations. The well is especially significant because it may be the first sign of a condition which is parallel to the St. Louis Pool, namely, that the Simpson sand production will be found on the west flank of big Wilcox sand production, as is the case of St. Louis. The Barnsdall Oil Co.'s No. 1 Fife in Section 14-8-5 was the Wilcox sand discovery well of this region, and it is immediately east and slightly south of the Gypsy Coker well.

In the Wilcox sand area of Maud, the Barnsdall Oil Co.'s No. 1 Coker, SE cor. SW Section 11-8-5 found the Wilcox sand at 4,316-28 feet and made 1,385 bbls. on the swab. The well is now being equipped with an automatic flowing device. It is worthy of note that the wells in this region which have been placed on the air-gas method of production have not made quite as much oil as they made by the swabbing method.

Misener Sand Discovery

The discovery of Misener sand production on the north side of the Maud Wilcox sand pool is also very interesting; and the Prairie Oil & Gas Co.'s No. 1 Billington, SW cor. NW Section 11-8-5, had this formation 4,050-60 feet and is flowing 400 bbls. daily.

Over on the west side of the township, the Misener sand pool has had several interesting developments. The Independent Oil & Gas Co.'s No. 1 Harding, SE cor. NW Section 18-8-5, which extended the pool half a mile north several weeks ago, has been drilled deeper to a total depth of 4,191 feet, with a big in-

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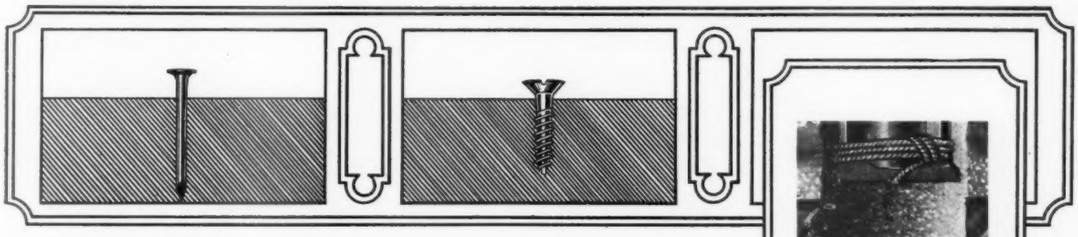

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crease in production. The output of the well jumped from 1,650 bbls. daily to 4,325 bbls. at the greater depth. This is the best well in this horizon to be found in the region. In this territory, the Gypsy Oil Co.'s No. 1 Miller, SW cor. SE SE Section 18-8-5, which at first made 51,000,000 feet of gas, is now down to 10,000,000 feet daily and the well is flowing 400 bbls. of oil with the gas.

A well which caused a great surprise in this region is the Prairie Oil & Gas Co.'s No. 1 Campbell, SE cor. SW Section 18-8-5. This well is one-quarter mile west of the Pure Oil Co.'s No. 1 Lindley, the discovery well of the pool; and it was originally drilled into the Misener sand several weeks ago. The Prairie well never produced more than 200 bbls. daily, and at one time was reported as having encountered water in the top of the formation. The water evidently became exhausted and the well was drilled deeper slowly. It now has a total depth of 4,226 feet, and the oil production has increased from 200 to 1,300 bbls. daily.

Earlsboro District

There were several wells completed in the older parts of Greater Seminole. Near Earlsboro, Amerada Petroleum Corp.'s No. 1 Bullock, NE cor. NW Section 8-9-5, had the Wilcox sand at 4,403-16 feet and flowed 520 bbls. daily. In the northeast extension of Earlsboro, the Skelly Oil Co.'s No. 3-A Mayes, NE cor. SE NE Section 1-9-5, had Wilcox at 4,418-36 feet and flowed 2,275 bbls. Skelly Oil Co.'s No. 1 Lottie, SW cor. NW NW Section 6-9-6, has the Wilcox 4,395-4,414 feet, and swabbed and flowed 1,054 bbls.

On the southeast edge of Earlsboro, the Magnolia Petroleum Co.'s No. 1 Moore, NE cor. NW SE Section 24-9-5, had a hole full of oil in the Hunton lime at 3,997-4,010 feet. This is one of the first wells to have such a good show in the Hunton lime in this area. North of Earlsboro, Watson B. Joyes and others' No. 1 Hare, NW cor. SE Section 31-10-5, had a show of oil in the Hunton at 4,445 feet when 2,000 feet of oil filled in the hole. While this well seems to be running too low to find the Wilcox sand productive, it will probably make a small Hunton lime well when plugged back.

Greater Seminole Production

The daily average pipe line runs from the Greater Seminole Field for the week ending Saturday, December 29, 1928, follow:

Barnsdall	1,851
Champlin	5,572
Continental	2,888
Consolidated	438
Mid-Continent Petroleum	10,122
Empire	12,610
Gulf	21,500
Magnolia	23,184
Oklahoma	37,298
Prairie	58,083
Pure	4,411
Shaffer	7,030
Shell	12,550
Sinclair	24,617
Texas	16,331
Tidal	12,250
White Oak	2,246
Total barrels	253,081

The daily average pipe line runs out of the St. Louis Pool for the same period are:

	Bbls.
Consolidated	3,700
Gulf	9,556
Independent	17,700
Magnolia	25,014
Oklahoma	54,453
Prairie	35,126
Shell	3,650
Sinclair	25,768
Texas	4,201
Tidal	1,407
Total	180,575

The production of the Wilcox sand wells in the St. Louis Pool on Monday morning, December 31, 1928, follows:

	Bbls.
Barnsdall Oil Co.:	
1, 2 and 3 Stahl	1,927
Gypsy-Sinclair et al:	
1 Stahl	3,624
2 Stahl	3,624
4 Stahl	712
5 Stahl	1,624
Phillips Pet. Co.:	
2, 3 and 4 Stahl	732
Sinclair Oil & Gas Co.:	
12 Blandin	295
13 Blandin	3,320
1 Nadash	150
Magnolia Pet. Co.:	
1, 2, 3, and 4 Hembree	5,119
1, 2, 3, 4, 5 and 6 H. E. Youts	6,092
2 C. A. Youts	650
1 T. Fyke A	81
1 T. Fyke B	3,683
1 Cherry A	1,780
T. B. Slick, Inc.:	
1, 2, 3 and 4 Hembree	12,660
2 Youts	465
3 Youts	185
1 Davis	5,051
Mid-Cont. Pet. Corp.:	
1 Quinn	215
Pure Oil Co.:	
1, 2 and 3 Thomas	10,414
Independent Oil & Gas Co.:	
1, 2, 3, 4, 5, 6, 7 and 8 Youts	21,685
Prairie Oil & Gas Co.:	
1, 2, 3, and 4 Wolfe	3,625
Shell Pet. Corp.:	
1 Smith	230
Shaffer Oil & Ref. Co.:	
1, 3 and 4 Cherry	2,640
Texas-Fuhrman Pet. Co.:	
Cherry	9,494
Total 59 wells	100,077

Seminole Production

The production of the Greater Seminole area by companies and leases on Thursday, December 27, follows:

Little River Pool

Company, farm—	Location	Wells	Prod.
Amerada:			
Nitey	2- 7-6	3	445
Amerada-Wilcox:			
Fore	35- 8-6	2	245
Barnsdall:			
Cotcha	23- 7-6	2	775
Hotulke	22- 7-6	3	380
Walker	4- 7-6	1	507
Blackwell:			
Baker	11- 7-6	4	1,375
Nitey	35- 8-6	6	2,327
Talley	14- 7-6	4	1,370
Bryan & Emery:			
Walker	4- 7-6	1	13
Carter:			
Cotcha, M.	23- 7-6	3	400
Cudjo, L.	23- 7-6	2	645
Fish	36- 8-6	4	970
Harjo, C.	11- 7-6	3	4,535
Harjo, M.	13- 7-6	2	635
Jackson	11- 7-6	4	875
Larney	24- 7-6	4	3,114
Lena	10- 7-6	1	612
Moore	11- 7-6	2	310
Tewee	14- 7-6	6	2,570
Thomas	11- 7-6	1	215
Wilson	12- 7-6	2	410
Champlin:			
Tewee	14- 7-6	2	990
Continental:			
Cosar	36- 8-6	7	1,810
Cosar, M.	25- 8-6	2	412
Continental & Fisher:			
Milsey	11- 7-6	2	625
Empire:			
Charity	24- 7-6	1	77
Coker	13- 7-6	1	700
Sandlin	3- 7-6	1	7
Gypsy:			
Brown, C.	33- 8-6	2	397
Brown, M.	33- 8-6	1	1,056
Campbell	33- 7-6	2	30
Conard	22- 7-6	2	617
Cosar, M.	25- 8-6	1	...
Cosar, W.	36- 8-6	2	32
Cotcha	23- 7-6	7	2,595
Denmark	11- 7-6	4	1,667
Hulhoke	14- 7-6	10	2,217
Mungee	1- 7-6	1	...
Payne	5- 7-7	1	20
Pottie	35- 8-6	4	392
Renton	11- 7-6	3	320
Independent:			
Davis, R.	13- 7-6	4	2,250
Tewee	14- 7-6	6	1,750
Williams	15- 7-6	1	190
Independent & Highway:			
Harris	23- 7-6	8	1,510
Independent & White Eagle:			
Davis	2- 7-6	4	510
I. T. I. O.:			
Campbell	1- 7-6	1	130
Dungan	35- 8-6	3	597
House, M. A.	1- 7-6	1	42
House, W. E	1- 7-6	1	27
House "B"	2- 7-6	4	474
Hull	26- 8-6	3	436
Jackson	1- 7-6	3	511
McCulla	1- 7-6	3	221
Nitey	2- 7-6	6	262
Phoebe "A"	36- 8-6	2	103
Phoebe "B"	36- 8-6	3	113
Reed	1- 7-6	1	12
Soketheche	1- 7-6	3	619
Magnolia:			
Cruse	2- 7-6	4	300
Denby	11- 7-6	4	568
Dixon	31- 8-7	1	...
Harjo, A.	14- 7-6	2	61
Harjo, B.	14- 7-6	2	466
Pottie	35- 8-6	4	210
Reed, E.	31- 8-7	1	32
Reed, L.	22- 7-6	3	610
McCulloch & Sands:			
Harrison	4- 7-6	1	15
Mid-Continent:			
Brunner	11- 7-6	4	720
Eleck	23- 7-6	1	180
Smith	5- 7-7	2	3,570
Wadsworth	36- 8-6	7	329
W. B. Pine:			
Hoyecha	26- 8-6	6	1,973
Pine-Phillips:			
Pottie	35- 8-6	2	337
Prairie:			
Chilcoat	25- 8-6	3	234
Dungan	35- 8-6	1	3
Gibson	14- 7-6	5	1,495
Harris	14- 7-6	4	1,125
House	2- 7-6	4	230
Johnson	24- 7-6	1	305
Lustey	5- 7-7	1	120
Moppin	24- 7-6	1	665
Talley	14- 7-6	4	995
Prairie & Amerada:			
Sunny	14- 7-6	8	3,940

(Continued on Page 120)

SEDGWICK COUNTY PLAY SPREADS; WILDCAT FLOWING 20 BBLS. HOURLY

By J. L. Dwyer
Staff Correspondent, Kansas Fields

With more production coming from the wildcat well of T. B. Slick, the LaRobb Oil Co. and others, the play in Sedgwick County seems to be spreading out, and the pool assumes a much more important aspect. The new well is No. 1 Smyser, NE cor. SW SE Section 36-25-1w, and at last reports was flowing 20 bbls. an hour. The top of the pay formation in this well was found at 3,436 feet, and the well drilled to 3,438 feet. At the time the top of the pay was found, the well was carrying 1,000 feet of water. The 5-inch casing was set and cemented at 3,394 feet, and after that the well was cleaned out. It began swabbing 220 bbls. the first six and one-half hours, and then started flowing 20 bbls. hourly. It is now shut in waiting for additional tankage to be constructed.

The production of this well is exceptionally important, and it advances the thought that the territory between the Marland Production Co.'s No. 1 Goodrich, in Section 16-25-1e, and the first Sedgwick wells around Section 12-26-1w may be one big pool, resembling another Eldorado. This prospect is not assured by the production of the Smyser well, but seems more logical than before. It had been thought likely that the two regions would be small in area) and that there would be little chance of their being connected; but the Smyser well causes a different light to be thrown on the region.

The production of the Sedgwick County wells on Monday morning, December 31, follows:

Gypsy-Marland & Bu-Vi-Bar Pet. Co.:	
No. 1 Wright	1,218
No. 1 Lyons	1,586
No. 2 Lyons	705
No. 1 Lantz	801
Marland Prod. Co.'s No. 1 Goodrich	2,665

Barber County

Barbara Oil Co. has the rig up for No. 1 Lytle, NE cor. SW, Section 12-33-13w.

Ellis County

Midwest Exploration Co.'s No. 1 Austin, NE cor. Section 36-12-16w, made 75 bbls. from sand at 3,057-87 feet.

Harvey County

Empire Oil & Refining Co. has the rig on the ground for No. 1 Tangeman, SW cor. NE NE, Section 19-22-1. Fisher, Lauck & Sandford's rig is up for No. 1 Regier, NW cor. NE, Section 17-23-2.

McPherson County

White Eagle Oil & Refining Co.'s No. 1 Larson, SE cor. NW SW, Section 31-18-2w, is dry and abandoned at 3,045 feet.

Ness County

Barnsdall Oil Co.'s No. 1 Lank, C SW, Section 35-18-21w, is spudding.

Pratt County

O'Haver & Jones moved the rig out for No. 1 Lunt, C SW NW, Section 15-28-14w.

Russell County

Liggett and others made location and moved the rig out for No. 1 Burham, NE cor. Section 20-11-15w. Midwest Exploration Co.'s No. 16 Dortland, SE cor. NW SE, Section 5-14-15w, has been completed for 80 bbls. in sand at 3,048-86 feet.

Sedgwick County

Patton and others made location for No. 1 Burham, SE cor. SW SW NE, Section 22-25-1. Bu-Vi-Bar Petroleum Co. and others moved the rig out for No. 3 Wright, NW cor. SW NE SE, Section 12-26-1w, Valley Center Pool.

Sumner County

Helmerick & Payne's No. 1 Wartick, SE cor. NE, Section 8-34-2, is dry and abandoned at 3,855 feet.

KANSAS WILDCATS

BARBER COUNTY

Barbara Oil Co.'s No. 1 Blunk, C NE NW Sec. 20-34-13w.. 2,000,000 ft. gas 4,755 ft; straight-reaming casing.
Rolland et al's No. 1 Pickens, NE cor. NW NE Sec. 27-30-14w ..... Drlg. 4,223 ft.

BARTON COUNTY

Everett & Wiley's No. 1 Ward, NW cor. SW Sec. 12-20-13w ..... Shut down 3,948 ft.
McJilton et al's No. 1 Evanston, SE cor. NW Sec. 34-17-11w ..... Rig abandoned.
Mid-West Exploration Co.'s No. 1 Karst, SW cor. SW Sec. 11-16-15w ..... Drlg. 2,875 ft.

BUTLER COUNTY

O. H. Fleming et al's No. 1 Brainard, NE cor. NW Sec. 22-24-3 ..... Drlg. 3,145 ft.
LaRobb et al's No. 1 Bronsenger, NE cor. SW Sec. 24-27-3 ..... Rig.
Swartz et al's No. 2 Randall, NW cor. NE NW Sec. 22-24-4 ..... Shut down 2,540 ft.

CHASE COUNTY

Griener & Fowler's No. 1 Carson, NE cor. NE Sec. 9-21-7 ..... Shut down 3,162 ft.

COWLEY COUNTY

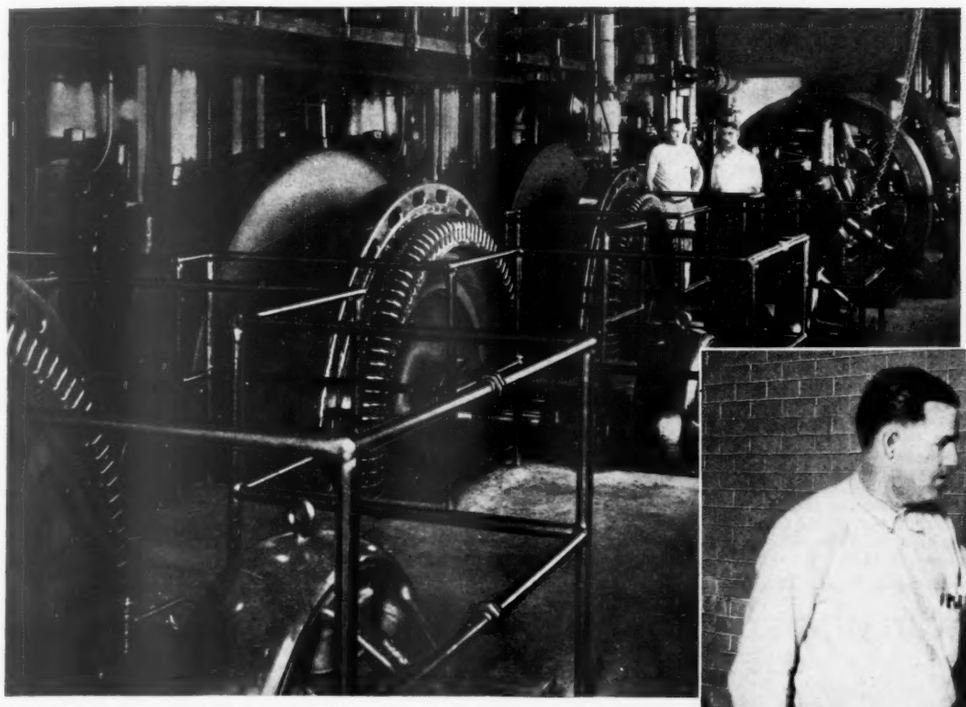
Jones & Hall's No. 1 Shapland, NE cor. NW SE Sec. 20-30-6 ..... Drlg. 3,054 ft.
Roth & Faurot's No. 1 Ridding, SE cor. NW Sec. 31-32-6 ..... Drlg. 2,490 ft.
Shell Pet. Corp.'s No. 1 Galley, NE cor. NW SW Sec. 18-35-3 ..... Drlg. 2,190 ft.
Pyle & Sutter's No. 1 Lindstrom, SW cor. NE Sec. 9-35-4 ..... Drlg. 1,650 ft.
Empire-Marland-Twin States' No. 1 Feaster, NW cor. NE Sec. 36-32-5 ..... Drlg. 3,165 ft.
E. B. Shawver's No. 1 Cook, NE cor. NE Sec. 20-30-6 .... Drlg. 2,860 ft.
Crow & White's No. 1 Powers, C NW NE Sec. 9-32-5 .... Sand 714-734 ft., 1,000,000 ft. gas
Slick & Martin's No. 1 Aspaugh, SW cor. NE Sec. 27-31-5 ..... Dry and abandoned 3,140 ft.
J. B. Markey's No. 1 Tatum, SE cor. SW Sec. 11-31-6 .... Shut down 500 ft.
Jones & Hall's No. 1 Shapland, SE cor. NW SE Sec. 20-30-6 ..... Shut down 3,396 ft.
Wakefield & Osborne's No. 1 Osborne, NW cor. NE Sec. 18-30-5 ..... Rig.

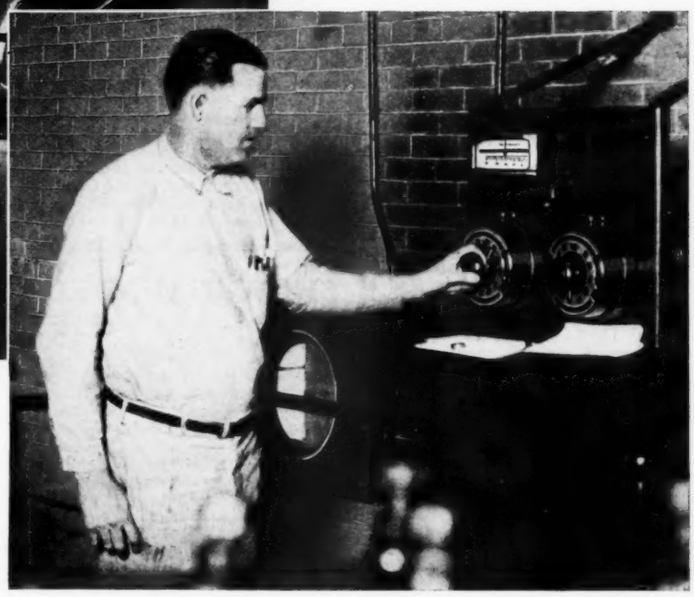
ELLIS COUNTY

Rush Oil Co.'s No. 1 Gatewood, NW cor. NW Sec. 4-15-20w ..... Shut down 1,100 ft.
Transcontinental Oil Co.'s No. 1 Boetcher, NW cor. SE SW Sec. 21-13-19w ..... Shut down 3,662 ft.
Finney & Weiner's No. 1 Freeman, SE cor. SW Sec. 24-15-20w ..... Spudded and shut down.
Labette Oil Co.'s No. 1 Urban, NE cor. NW NW Sec. 19-15-16w ..... Shut down 3,060 ft.
Atlantic Oil Prod. Co.-D. B. Mason's No. 1 Gorham estate, C SE SE Sec. 35-15-16w ..... Drlg. 2,150 ft.
Derby Oil Co.-Empire Oil & Ref. Co.'s No. 1 Krause, NW cor. SW SW Sec. 17-14-19w ..... Drlg. 3,660 ft.
Phillips Pet. Co.'s No. 1 Brull, C NW Sec. 34-14-17w .... Drlg. 200 ft.
Moncrief et al's No. 1 Johnson, SW cor. NE Sec. 9-13-19w ..... Rig.
John Brown's No. 1 Gestner, SE cor. SW NE Sec. 13-13-18w ..... Drlg. 380 ft.
Empire Oil & Ref. Co.'s No. 1 Wann, NE cor. NE Sec. 31-12-19w ..... Casing 3,104 ft.
Mid-West Exploration Co.'s No. 36 Furthmer, SE cor. SE Sec. 25-12-16w ..... Drlg. 3,105 ft.
Phillips Pet. Co.'s No. 1 Shultz, C NE Sec. 5-12-17w .... Lime 3,573-75; swab'd 280 bbls. oil.
Mid-West Exp. Co.'s No. 1 Austin, NE cor. NE Sec. 36-12-16w ..... Oswald lime 3,105 ft.; 70 bbls. oil daily.
Marland Oil Co.'s No. 1 Vine, SW cor. SW SE Sec. 27-11-19w ..... Drlg. 3,240 ft.
Stearns & Streeter's No. 1 Plummer, NW cor. SE Sec. 2-11-17w ..... Dry and abandoned 3,522 ft.
T. B. Slick, Inc.'s No. 1 Craig, C NW NE Sec. 8-11-16w .. Dry and abandoned 3,545 ft.
Davis & Hazlett's No. 1 Wieland, NE cor. NE Sec. 1-13-16w ..... Rig.

(Continued on Page 104)

Check Power Plant Temperatures *as well as Still Temperatures*





ECONOMY in still operation is impossible without close control of correct temperatures.

Checking temperatures is almost equally important in the power plant.

If you operate steam boilers systematic observation of flue gas temperatures enables the engineer promptly to detect boiler inefficiency —usually due to dirty tubes, broken baffles, leaky settings, etc.

If you operate Diesel or oil engines, watch your cylinder exhaust temperatures.

Brown Pyrometers are extensively used on both of these applications as well as for still and tower operation. Write for information.

THE BROWN INSTRUMENT COMPANY
4488 WAYNE AVENUE, PHILADELPHIA, PA.

Operator in Power Plant of the Indian Refining Company's Power Plant, Lawrenceville, Ill., checking exhaust temperatures from the cylinders of four 600-H.P. Worthington Diesel Engines. Irregularities in Diesel or oil engine operation are immediately shown by a rise or fall in the temperature of the exhaust gases from the cylinder or cylinders affected. Hence, observation of these temperatures is the simplest and surest method of checking engine operation. The operator is shown reading these temperatures from each cylinder in turn by means of a Brown Indicating Pyrometer and a Brown Rotary Switch.

Brown Pyrometers

"To measure is to economize"—Pascal

Skelly Gets Big Champagnolle Gasser

Ohio Oil Co. Also Completes Good Oil Producer in Eastern Extension Same Field. Production About Stationary

By D. H. Bancroft
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Dec. 31.—Completion of Champagnolle's biggest gas well and of a 570-bbl. producer on the west side of the eastern extension of the same field were high spots during the holiday week in this area. Skelly Oil Co.'s No. 1 Kelly in C SW NE SE, Section 9-17-14, was the big gasser, gauging 60,300,000 feet of dry gas, total depth 2,757 feet with the bottom 14 feet in sand. It eclipses Reliance Drilling Co.'s No. 1 Kelly, a quarter mile northwest by 10,000,000 feet and Oilwell Corp.'s No. 1-A Kelly, offsetting the Reliance well on the east, by 20,000,000 feet and the Skelly's No. 1 J. M. Gregory in Section 15-17-14, by over 10,000,000 feet. Total depth is considerably less than any of these other three wells. Skelly's Gregory well was completed at 3,051 feet, the Oilwell's at 2,790 feet and Reliance Drilling Co.'s at 2,808 feet.

The well in the eastern extension was Ohio Oil Co.'s No. 1 Alphin in the SE cor. NW NW, Section 7-17-13, flowing 570 bbls. from 5 feet of sand, total depth 3,039 feet. C. E. Murdock's No. 2 Union Sawmill in Section 6-17-13, was not nearly so good a producer, flowing only 60 bbls. from 22 feet of sand, total depth 3,006 feet. Magnolia Petroleum Co.'s No. 2 Dumas in Section 11-17-14, while not much of a well from a producing standpoint, was of some interest because of its location a quarter of a mile east of the nearest production in the original deep sand area of the field. It had been standing 1,000 feet in fluid for a month and when put on the pump made only 12 bbls. The bottom is 7 feet in sand at 3,227 feet. The same company's No. 2 Alice Gregory in the NE cor. NW SE. Section 15-17-14, was Champagnolle's twenty-second gas well, gauging 28,300,000 feet at 820 pounds, total depth 2,822 feet. The 19 wells completed in Champagnolle this year had an initial open flow totaling 508,090,000 feet.

Interesting Completion

C. E. Murdock's No. 1 Gregory in Section 10-17-14, is another interesting completion because of its history. Brought in the second time this week it pumped 215 bbls. the first 12 hours from 29 feet of broken sand, total depth 3,207 feet. Drilled by Garrett-Modisett Drilling Co. as the pioneer well in what three or four months later proved to be the main (deep sand) body of the pool, it was finished just a year ago pumping and flowing 50 bbls. of oil with 450 bbls. of water from 4 feet of sand, total depth 2,765 feet. It kept this up for a few days and then went dead, was cleaned out and came back with 15,000,000 feet of gas with the same amount of fluid but a considerably higher percentage of oil. Again it sanded up and when cleaned out came back as a still better producer, doing 5,000,000 feet of gas with 6,000 bbls. of fluid 40 per cent water. Meantime it had sold twice, to Keen & Woolf the first time and by them to the present owner who started deepening it last month.

The remaining eight of the week's completions in proven territory were in Louisiana, five gassers, one producer and two abandoned locations. Dixie Oil Co.'s No. 6-B Files & Mabry in Section 14-21-15, Pine Island, pumped 40 bbls. on second completion at 3,800 feet. It was one of the wells drilled during the excitement following discovery of oil in the deeper strata of the Trinity in July, 1927, and was finished as a 20,000,000-foot gas well with a light spray of oil at 3,695 feet. Last October deepening was begun, completion being delayed by a protracted fishing job.

Morehouse Parish contributed two and Ouachita one more to the Monroe district's production. Natural Producing Co.'s No. 21 Crossett, Section 22-21-4, was a 12,000,000-foot producer at 2,167 feet and Southern Carbon Co.'s No. 7 Tensas in Section 15-22-4, Morehouse, duplicated it at 2,161 feet. Pipes & Mack completed No. 1 Wright, Section 11-18-4, Ouachita Parish, making 1,000,000 feet, total depth 2,210 feet. Richland Parish added one more to its list of 66 producers with Richland Producing Co.'s No. 1-D Sartor in Section 32-16-6, a 10,000,000-foot well, total depth 2,450 feet. Magpolia Petroleum Co.'s No. 1 M. M. Branton in Section 5-22-9, Shongaloo district of Webster Parish, gauged 5,500,000 feet at 235 pounds, total depth 2,639 feet.

New Locations

Arkansas Natural Gas Corp. abandoned locations for No. 5 Horton-Prince, Section 30-16-11, and No. 8-A Van Hoose in Section 31-16-11, Elm Grove district of Bossier Parish. At the same time, it made location and has rig up for No. 1 Tidwell in the SE cor. SE NE, Section 29-22-11, Bossier, about 5 miles southeast of Cartersville gas field. Similarly, Dixie Oil Co. immediately on completion of the Files & Mabry well made location for two more in Pine Island. No. 5 Hobbs, Section 21-21-15, which is drilling below 1,700 feet, and No. 3-B Wells in the same section. The company's No. 91 Dillon in Section 14-21-15, which gauged 8,000,000 feet of gas from 8 feet of sand, total depth 3,621 feet and then went dead and filled up with salt water, was plugged back to 3,611 feet and is swabbing.

With in excess of 30,000,000 feet of gas shut in in six wells in its Johnson County, Arkansas, gas field, Arkansas Natural Gas Corp. has begun two more, No. 1 McPherson in the SE cor. SE SE, Section 10-10-24, drilling, and No. 2 Bynum in Section 12-10-24, rig up.

Lion Oil Refining Corp. has picked up 14 feet of broken sand in No. 2 Nash on the north edge of Champagnolle eastern extension in Section 6-17-13, and cemented 6⅝-inch at 3,003 feet for a test, total depth 3,048 feet; No. 5 Union Sawmill at the opposite end of the extension has 7 feet of sandy shale at 3,276-83 feet and was arranging to test. If it gets production it will be deepest in the entire Champagnolle district and prove a new lens. Three wells in the older deep sand area of the field tested salt water. Ohio Oil Co.'s No. 1 L. L. Ward in Section 15-17-14, on the south fringe of the pool and a west offset to No. 1 O. R. Ward, a gasser, made a drill stem test and flowed salt water with some oil from a shallow lens at 2,614-20 feet and was coring at 2,748 feet. Oilwell Corp.'s No. 2-A Kelly in Section 9-17-14, offsetting Reliance Drilling Co.'s big gasser on the east, got water at 2,891 feet and is reaming to bottom to case off the flow with 6⅝-inch, total depth 3,044 feet. Rovenger Corp.'s No. 1-B Perdue in the same section flowed salt water from 4 feet of sand at 2,655-59 feet and is coring.

Notwithstanding an increase of 500 bbls. in Champagnolle's daily average runs from the field, and 250 in Caddo light oil shipments, production of the division was only 50 bbls. more than it was last week. Smackover heavy oil movement canceled the gain in Champagnolle and declines in all other Arkansas pools with five in Louisiana would have created a decline but for an increase of 140 bbls. in Nevada County which helped in maintaining daily average shipments on about a par with last week's figures. Total runs were 117,070 bbls., 37,035 from Louisiana and 80,035 from Arkansas. The runs from the several pools were:

Louisiana	
Caddo, light	9,435
Caddo, heavy	2,810
Homer	4,040
Haynesville	5,530
DeSoto-Red River	4,035
Elm Grove	610
Bellevue	875
Cotton Valley, light	50
Cotton Valley, heavy	3,150
Uranla	6,000
Pleasant Hill	500
Total	37,035
Arkansas	
El Dorado	4,950
Smackover, light	7,085
Smackover, heavy	52,320
Stephens	1,010
Nevada County	1,550
Lisbon	1,625
Champagnolle	11,395
Bradley	100
Total	80,035
Both states	117,070
Last week	117,020
Increase	50

SHOW IN HINDS COUNTY WILDCAT IS FEATURE IN MISSISSIPPI

By D. H. Bancroft

SHREVEPORT, La., Dec. 31.—While waiting for casing to set and plug to be drilled on Joe Hurley and others' Calhoun County, Arkansas, wildcat, operators in this division were intrigued slightly by reports from Mississippi having to do with a show of oil in a Hinds County wildcat. Samples of the oil brought here showed it to be a heavy, about 20 gravity, black oil, but there doesn't seem to be much of it. The well is on the Lewis land in the NW NE Section 12-15-5 and is the third drilled on that fee. It has had several listings; as Mid-Southern Oil Co., Chidester and others, and Edwards Oil Co., different reports carrying it under one or the other of these listings. Reports reaching here give it 3 to 5 feet of sand, total depth 923 feet, with 6-inch cemented at 915 feet in lime.

The show was made over the past week end and bailing has been going on at intervals all week. One of those interested is quoted as estimating it at 100 bbls. of water and 1 bbl. of oil while another report was that it has bailed about a barrel of oil altogether. Every time it is bailed to the bottom sand heaves up into the casing and on one occasion when they went in with drill stem to clean it out they found 50 feet of it. Oil is from the upper two or three feet with the water occupying the remainder. The operators have a block of 30,000 acres and claim they will drill three more wells to test their structure.

Calhoun County Well

Hurley cemented 6⅝-inch casing in his Calhoun County well, No. 1 Arkansas Timber Co., in Section 29-16-12, late last week at 2,125 feet to cut off a flow of water that showed up soon after he had cored 9 feet of sand, the Nacatoch, showing oil and water from 2,239-49 feet, and the fraternity is interested in the outcome of the test to a considerable degree. Appearance of reports giving the sand record at various depths has led to some unfavorable opinion but nevertheless there has been quite a bit of trading around the location in the meantime. Hurley also is busy assembling a big block on the Hatchitigbee anticline in southeastern Alabama.

Dixie Oil Co.'s No. 1 Gilbert, in Section 29-21-5, Claiborne Parish, which has been an interesting job since it spudded in, made its first test at 4,326 feet, in the sand at the base of the anhydrite, and got salt water. Last report on the well was coring at 4,347 feet. El Dorado Chief Oil Co.'s No. 1 Baker in Section 26-20-7, Claiborne Parish, is shut down at 2,092 feet, but took a core for one of the larger companies with which it is on a trade for protection and wanted another look at the lime before going further.

Woodley & Collins made location in the SW cor. NW SW Section 23-22-7, Morehouse Parish, for No. 1 Harp which, it is understood, is to be another deep test not far from The Texas Company's No. 1 Myers in Section 15-22-7, which went to 2,939 feet and was abandoned when 4½-inch casing failed to establish a water shut-off. It cored oil sand at 2,896-2,906 feet and again at 2,919-39 feet but got water on both tests. Woodley & Collins drilled No. 1 Bonita in Section 3-22-9 to 3,017 feet where it tested salt water; a previous test in the Nacatoch at 2,798 feet also showed water.

D. C. R. Oil Co. (D. C. Richardson, Jr.

(Continued on Page 116)

North Louisiana

Caddo Parish

Mooringsport—Falcon Drilling Co. cemented 6-inch at 2,240 feet and is bailing to test No. 3 Muslow, Section 29-20-15, total depth 2,312 feet in 8 feet of broken sand.

Lewis—Snake Creek Oil Co. made location 400 feet south and 200 feet east NW cor. SW NW, Section 12-27-16.

Pine Island — Dixie Oil Co. plugged back from 3,631 to 3,511 feet on No. 9 Dillon, Section 14-21-15, and is swabbing; No. 5 Hobbs, 250 feet north and west SE cor. NW SE, Section 21-21-15, set 40 feet of 10-inch and is drilling at 1,673 feet; No. 3-B Wells, Section 21-21-15, is a location 600 feet north and 250 feet west SE cor. SW, Section 21-21-15. Magnolia Petroleum Co. set 8⅛-inch casing at 3,698 feet on No. 18 Robertshaw, Section 24-21-15, total depth 3,790 feet. Thomason and others cemented 8-inch at 1,350 feet on No. 7 Muslow, Section 31-21-15.

Claiborne Parish

Homer—Oakes and others' No. 1 Richardson, Section 19-21-7, is drilling at 500 feet.

Haynesville—Smitherman & McDonald cemented 6⅝-inch casing at 4,190 feet on No. 1 Miller, Section 17-23-8.

Monroe District

Morehouse — Natural Gas Producing Co.'s No. 22 Crossett, Section 35-21-4, has rig up.

Ouachita — Magnolia Petroleum Co. made location 660 feet north and west of the C of Section 18-19-5, for No. 1 United States. Southern Carbon Co. cemented 6-inch at 2,110 feet on No. 10 Fairbanks, Section 43-20-4. West Virginia Oil & Gas Co.'s No. 6 fee, Section 6-18-4, is drilling at 2,010 feet.

Union—Interstate Natural Gas Co. set 212 feet of 10-inch on No. 1 Hodges, Section 4-19-3.

Richland Parish

Community Oil & Gas Co.'s No. 1 Boise, Section 33-16-6, is drilling at 1,300 feet. Magnolia Petroleum Co. is drilling No. 2 J. Sartor, Section 16-16-6, at 1,227 feet.

Webster Parish

Cotton Valley — Cotton Valley Syndicate's No. 19 Hope, Section 24-21-10, has 8¼-inch casing cemented at 3,500

(Continued on Page 117)

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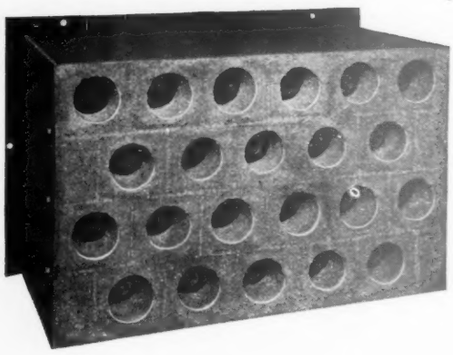


by the Bendster "Duo-Mix" Low Pressure Gas Burner

YOU need deliver gas to the Bendster "Duo-Mix" Burner at a pressure of only 3 ounces to assure complete combustion—and admit only a minimum of excess air which means high economy. The draft required is also a minimum quantity.

Under circumstances where capacity is far more important than fuel economy, the Bendster "Duo-Mix" Burner has found equal favor. When a boiler or still equipped with the "Duo-Mix" is "forced," the flexibility of the burner and the complete combustion assure a greater total heat delivery and therefore more capacity.

Shown here are the standard 11- and 22-jet burners for the furnaces of stills and both large and small power and heating boilers. Unit type construction makes it possible to furnish the exact number of jets required by any particular furnace or firebox.

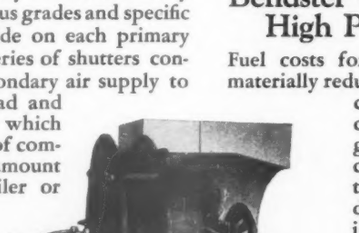
Oil field boilers equipped with "Duo-Mix" Burners have a longer life and require fewer repairs—due to the short and non-luminous flames. Combustion is completed in the firebox and not in the tubes—and the heat absorption is more equally distributed over the heating surfaces. "Duo-Mix" Burners for oil field boilers differ from those illustrated, only in the construction of the manifold and box.

The "Duo-Mix" also operates efficiently on high pressure gas but at greatly increased burner capacities.

* * *

Air for combustion is mixed with the gas at two different places in the "Duo-Mix" Burner. This double mixing is applied on the principle of the Bunsen Burner; it means that all the gas is burned and that more heat (per cubic foot of gas used) is delivered to the boiler or still.

The proportion of primary air to secondary air is adjusted to suit various grades and specific gravities of gas by the slide on each primary air mixing chamber. A series of shutters control both primary and secondary air supply to care for variations in load and minimize the excess air which would chill the products of combustion and reduce the amount of heat absorbed by boiler or still heating surfaces. One lever operates all shutters; remote control can be applied to any number of burners as a unit.



The burner box is welded from sheet steel; steel pipe is welded to make the gas manifold. Perfect and permanent alignment of the jets is assured by securely welding the manifold to the box. The individual refractory radiant blocks serve as ignition chambers and protect the jets from radiant heat; they are cemented together and cemented and bolted to the box. This construction gives a burner that is rugged, light in weight, easily installed, and low in maintenance.

Write for Bulletin L-51 and data regarding the application of "Duo-Mix" Burners to your boilers and stills.

Bendster Combination Oil and High Pressure Gas Burner

Fuel costs for stills and boilers have been materially reduced by this burner, not only because it assures more complete combustion of ordinary oil and gas fuels, but also because it successfully burns lower grade fuels that have previously given much difficulty—such as cracking residue, and residue and acid sludge mixtures.

This Bendster Burner also has the following characteristics: easy and accurate regulation of fuel and air supply to secure wide range of capacity at high economy—self-cleaning and requires minimum attention—change from oil to gas by simply opening and closing supply valves—group and remote control are possible—rugged construction resulting in long life and freedom from repairs—easy to install.

Write for Bulletin A-50

BENDSTER BURNER & ENGINEERING CO.

1450 SOUTH SECOND STREET ST. LOUIS, MISSOURI

Two Mile Extension to Bruner Field

New Pool May Possibly Rival the Old Luling Pool but Production May Be Slower and Last Longer

By B. D. Stevenson
Staff Correspondent, Southwest Texas

SAN ANTONIO, Tex., Dec. 31.—Further extensions of the new pools in the Laredo district and a full 2 miles extension of the Joe Bruner or Salt Flats Pool in Caldwell County at Luling were main features of the work in Southwest Texas. The Humble Oil & Refining Co.'s No. 1 T. B. Johnson, 2 miles and more northeast of nearest production in the Joe Bruner Field at Luling, came in for about 100 bbls. of oil and some water. They are plugging back to shut off some of the water. The well is probably on the edge. It was located far in advance of the line of development and may have missed it about one location for the bigger production. It is considered quite as important regardless of its size for it makes the field about 4 miles long and practically proves up all the intervening territory.

As a general thing the oil fraternity working in the new pool is of the opinion that the pool quite possibly may be developed to one of the size and importance of the old Luling Pool which has produced over 36,000,000 bbls. of oil and is considered one of the most profitable pools ever brought in. The new pool is producing from the same formation, the Edwards lime, and has had some very sizable wells that produced over 1,000 bbls. initially and there is every reason to believe will produce others. Wherever the Edwards lime is a little tight the production is less; where it is porous or has a cavity the production is more. Some believe it is a little tighter in the new pool than in the old one and may give up the production a little slower but last longer. Acreage is so much cut up among various owners that offset drilling will necessitate immediate development unless the production increases to a point where proration will seem advisable.

The Golden West Oil Co.'s No. 1 Malone which blew out at about 1,100 feet has been completed as a gas well and is estimated at about 3,000,000 feet. It has been turned into the line and is being used as fuel in the field. It is important as a marker in the field as well as a fuel producer since there have been but two wells of that kind in the field, the other being 2 miles or more northeast. Golden West has skidded the derrick from No. 1 Malone, 50 feet southeast for No. 2, which will case off the gas and drill to the Edwards lime. Golden West Oil Co.'s No. 1 Cook, which is a little southeast of the other production, is drilling into the Edwards. It is about 1,000 feet southeast of a line drawn through the center of the producing territory. No. 1 Cook drilled out the plugs late in the week and while drilling in was flowing a small amount of oil but the well was not completed as this was being written.

Laredo District

Renewed interest is being taking in the Magnolia-Cole Pool since John J. O'Hern went 2 miles north of production and brought in a big gas well that may be in a separate pool or later may connect with the other. Magnolia has started a well in the southwest corner of Survey 660 which is a mile north of O'Hern and the Houston Gulf Gas Co. set casing in its No. 1 S. Benavides at 2,298 feet in the western part of Survey 693 which is a mile east and three-fourths of a mile south of O'Hern. The Houston Gulf Gas Co. well showed considerable gas but did not get a perfect test due to having an imperfect seat. If it makes much of a producer it will develop something entirely new for that territory.

In the Albercas Pool in the southeastern part of Webb County, Rycade Oil Corp. brought in No. 6 Yeager-Strohman flowing 900 bbls. of oil a day and No. 7 about 600 bbls. a day. East of it and a little north of a direct offset the Sun Oil Co. brought in No. 9-A Yeager-Strohman for 300 bbls. Rycade Oil Corp. has only about three more locations before it will reach the south line of its lease. Each new location has extended the pool that much farther to the south. Locations have been made for Nos. 8 and 9 Yeager-Strohman on down the line with the Sun Oil Co. making locations to offset them on the east. Then the field will run into the acreage that Marshall bought from Kitselman & St. Albans and a little additional drilling will run it into the Henne, Winch & Fariss Pool on the south. In the north end of the Albercas Pool, O. W. Killam drilled No. 32 Bruni in the center of the west half of Block 57, and has just abandoned it at 2,332 feet dry. It was an attempt to pick up the line of production and extend it north or northeast. The field has been standing still at that end for some weeks.

In the Schoolfield-O'Byrne Pool in northwestern Duval County, the Onyx Oil Co. has completed No. 2 Krauter which is reported as a 75-bbl. well in sand at 2,330-48 feet, the total depth being 2,348 feet.

Coast Fields

Houston Oil Co. after weeks of work has succeeded in plugging back from 4,992 feet in its No. 4 Wilson Heard in the Refugio Field and has made an oil well out of it but with considerable water at about 3,700 feet. It will endeavor to shut out more of the water. This well is a north offset to the Texas Gas Co.'s No. 1 Claude Heard, which at 3,702 feet was the discovery oil well of the field at the south end of the field. It was later sold to Benedum & Trees. Benedum & Trees brought back the discovery well as reported last week, after the well had gone dead. Last week their No. 3 Claude Heard, south offset to the discovery well, was brought in at the same depth, 3,700 feet, but it fails to flow though good for considerable oil. No. 3 Fox of the Houston Gulf Gas Co. reported as running wild a few weeks ago was not under control late in the week but the derrick had been replaced and rig up and tools ready to go into the hole to mud it off. The disappointment of the field was the Houston Gulf Gas Co.'s No. 7 Lambert in the northwest part of the field which is now at 3,900 feet and drilling having failed to get any production at around 3,700 feet which is the sand now sought.

Magnolia has rigged up and is about ready to spud in its No. 1 Glenwinkle, a couple of miles north of the field, and Blanco Creek Oil Co. is moving rig to No. 1 St. John, about 6 miles to the northwest of the field.

Agua Dulce Field

In Nueces County, Alexander & Smith's No. 1 Bowers, a mile north of the discovery well, is a dry hole at 2,503 feet which is 500 feet deeper than the discovery well. Houston Oil Co.'s No. 1 Anderson, 800 feet south of the discovery well, made a good gas well in sand at 2,018 feet to the top of the sand compared with 2,013 feet to the top of the sand in discovery well. The Agua Dulce Oil & Gas Co. has made a location for a well on the O. W. Sanders tract south of the discovery well, 660 feet from the north line and 1,980 feet from the west line of Section 35. The R. & G. Corp.'s No. 1 Ed Allen, a mile southeast of the discovery well, that failed to get production in the 2,000-foot sand and which has been standing at 3,008 feet has started to drill deeper.

Humble-Reiter-Foster Field—Duval

Humble Oil & Refining Co.-Reiter-Foster's No. 12 Kohler, Survey 403, located 1,485 feet to south line and 165 feet to east line, is rigging up; No. 13 Kohler, Survey 163, located 495 feet to east line and 165 feet to south line, is rigging up.

Driscoll Field

Robert Driscoll's No. 31 Driscoll, Survey 448, located 2,100 feet to east line and 900 feet to the south line, is drilling at 2,080 feet.

Schoolfield and O'Byrne Pool

Magnolia Petroleum Co.'s No. 3-B Hahl, Survey 61, located 3,081 feet to east line and 150 feet to the south line, is rigging up. Sun Oil Co.'s No. 2 W. P. Norton, Survey 250, Block 19, located 450 feet to the east line and 150 feet to the south line, is drilling at 1,080 feet; No. 2 Henne-Winch, Survey 250, Block 20, located 150 feet to north and west lines, is skidding derrick. S. & O. Oil Co.'s No. 1 Hahl, Survey 250, Block 23, located 220 feet to north and west lines, is drilling at 2,000 feet, sand at 1,622-25 feet testing some oil and salt water. Onyx Oil Co.'s No. 2 Krauter, Survey 250, Block 20, located 558 feet to east line and 150 feet to north line, has sand at 2,326-46 feet. The Texas Company's No. 2 Hahl, Survey 250, Block 18, located 450 feet to north line and 150 feet to west line, is drilling at 400 feet.

Randado Field—Jim Hogg

Magnolia Petroleum Co.'s No. 41 Merchants State Bank, Survey 155, located 150 feet to north and east lines, is drilling at 2,557 feet. T. J. Conway's No. 1 C. Palacious, Survey 232, Block 6, located 175 feet to north line and east line, is drilling at 2,010 feet. Randado Oil Corp.'s No. 27 Palacious, Survey 291, is drilling at 1,100 feet.

Alworth Field

Alworth-Stevens-Hild's No. 15 M. Garza, Survey 39, Block 9, located 300 feet to northwest lines and 410 feet to southwest lines, has sand at 1,028 feet. Brooklyn Oil Co.'s No. 1 Garza, Survey 40, Block 2, located 150 feet to northeast and southeast lines, is drilling at 1,812 feet.

Reiser Field—Webb

Marts & Beavens' No. 2 Johnson, Survey 602, Block 11, located 550 feet to west line and 250 feet to north line, is moving on. W. O. Wheatley's (R. C. Holsworth) No. 1 Wheatley, Survey 1,569, Block 3, located 847.7 feet to north line and 305.2 feet to east line, is drilling at 1,800 feet.

Albercas Field

O. W. Killam's No. 31 Bruni, Block 64, is running tester, sand at 2,206-09 feet; No. 23 Bruni, Block 57, is drilling at 2,100 feet. Sun Oil Co.'s No. 9-A Yeager-Strohman, Share 5, located 3,775 feet to north line and 150 feet to west line, has sand at 2,158-61 feet; No. 10-A Yeager-Strohman, Share 5, located 475 feet to north line and 150 feet to west line, has sand at 2,147-59 feet; No. 11-A Yeager-Strohman, Share 5, located 4,375 feet to north line and 150 feet to west line, is drilling at 1,100 feet with 10-inch casing set at 20 feet.

Magnolia Petroleum Co.'s No. 13 Yeager-Strohman, Share 5, located 150 feet

(Continued on Page 115)

GONZALES WILDCAT STARTS TO HEAD; FILLED WITH OIL WHILE STANDING

By B. D. Stevenson

SAN ANTONIO, Tex., Dec. 31.—Empire Gas & Fuel Co.'s No. 1 Norwood, in the north part of Gonzales County has not yet turned in its final verdict. The company is rigging up standard equipment to pump it and tubing is en route. It will be some days before it will be on the pump. While rigging up standard equipment the well has been allowed to stand and again filled with oil and started to head. While it was being swabbed it made around 400 bbls. a day, total depth being 3,775 feet. There has been some stiff trading around the well but only one new test has been announced. Cranfill & Reynolds have moved in to a location about 600 feet south of the Empire Gas & Fuel Co.'s well, the Cranfill & Reynold's location being 150 feet southeast of the northwest line of the L. F. Karnstadt farm and 150 feet southwest of the public highway through the farm.

Several wildcat tests will start up immediately after the first of the year. National Oil Co., which has been one of the most extensive wildcatters in Southwest Texas among the independents and which has been doing no drilling for several weeks, has spudded in its No. 1 Melcher in Fayette County south of La Grange. Fayette County lies between Washington County on the northeast and Caldwell on the southwest, with Austin County also on the northeast. In both Washington and Austin on the northeast and Caldwell and Gonzales on the southwest a lot of new production has been discovered the past year and this makes Fayette County interesting if for no other reason. Only one other well is drilling in the county that being R. E. Phalon's No. 1 Cervenka down around 3,000 feet.

Will Use Magnetometer

National Oil Co. has arranged to use the magnetometer on the Ball ranch where its No. 1 Ball a few months ago got quite a little gas and where location has been made and derrick is up for No. 2 Ball. Before starting No. 2 it will be checked with the magnetometer. National is also starting No. 1 Don Adams in the western part of Zapata County. Derrick was erected some weeks ago. It is in a new part of the county where little or no drilling has been done and interesting for that if for no other reason since the theory is common that the Laredo territory is lying in folds generally running north and south and that additional folds both east and west of the producing folds will be found productive. Robert Driscoll the past year found one new producing fold on the Driscoll ranch in Duval County east of proven production and the National No. 2 Ball is still east of that.

Duval County

Magnolia Petroleum Co.'s No. A-2 Hahl, Survey 51, located 150 feet to east line and south line, is in sand at 4,064-71 feet. O. Henry Oil Co.'s No. 1 Henry, Block 1,879, located 450 feet to southeast lines and 220 feet to northeast lines, has spudded in and is drilling at 400 feet.

Starr County

The Texas Company's No. 1 Ofelia Resendez, Block 174, Porcion 69, located 150 feet to south and east lines, is drilling at 3,250 feet. Crays & McCardle's No. 1

(Continued on Page 114)

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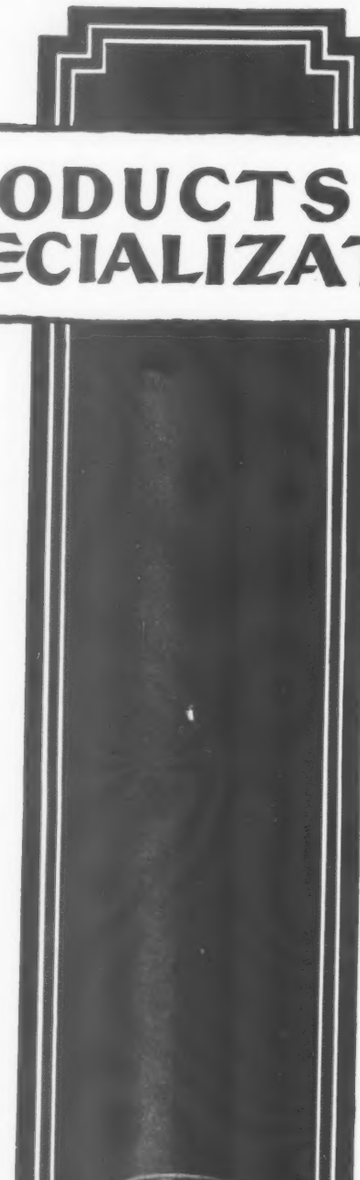

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Good Extension of Raccoon Bend Pool

Two Fair Wells Completed at East Hackberry. Additional New Production at Pierce Junction and Blue Ridge

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Dec. 31.—Despite the fact that there was a decided let-up in drilling operations in the Gulf Coast district over the holiday season, the past week witnessed another good extension at Raccoon Bend, the completion of two more fair wells at East Hackberry and the bringing in of additional new production at Pierce Junction and Blue Ridge and a number of smaller wells in other scattered fields. The new production at Pierce Junction and Blue Ridge the past two weeks has boosted the daily average output for the Gulf Coast to 138,642 bbls., the highest since last July.

The Raccoon Bend district of Austin County, which, although not a salt dome, gives indication of becoming one of the largest Gulf Coast Fields in area, if not one of the most important, received another extension the middle of the week in Humble Oil & Refining Co.-Valley Oil Corp.'s No. 1-B Bracey, which came in flowing an estimated 1,200 bbls. daily through a half-inch choke from a sand at 3,357 feet. The well is 600 feet west and 200 feet north of No. 1-A Bracey, the extreme northeast producer in the field.

This field, in which the first important production was developed this year, now has five commercial producers, excluding gassers, extending over a length of over a mile and a half. Although it is expected the field will produce eventually a large amount of oil, it will be developed conservatively as all the acreage is held jointly by the Humble Oil & Refining Co. and the Valley Oil Corp.

Another well at Raccoon Bend was being watched Sunday, No. 1 Beal, which drilled plug late Saturday and is expected to set screen by Monday and bail.

East Hackberry's New Wells

East Hackberry's two new wells during the week were Calcasieu Oil Co.'s No. 12 Watkins and No. 5 Valery, the former flowing initially at the rate of 940 bbls. daily through a three-eighths inch choke from sand at 3,960 feet and the latter flowing 1,200 bbls. daily through a similar choke at 3,863 feet. A third well, No. 1 Breaux, which was expected to link the production of the main part of the East Hackberry Field with that of Louisiana Land & Exploration Co.'s No. 3-B Calcasieu Lake, a mile and a quarter east, tested salt water.

Further proving up of production on the northeast side of Pierce Junction to link production on the north and east flanks was accomplished in the completion of Superior Oil Corp.'s (Moody Corp.) No. 3-B Whitehead, which came in flowing an estimated 1,200 bbls. daily at 4,719 feet. This well offsets T. G. Shaw-Texas Exploration Co.'s No. 2-E Fitzsimmons, the only other producer in this immediate district.

At Blue Ridge, South Texas Petroleum Co.'s No. 1 Lafferty, a former producer, was deepened to 3,605 feet, at which depth it came in flowing 1,200 bbls. daily, materially helping to restore some of Blue Ridge's greatly depleted production. Superior Oil Corp. (Moody Corp.) also got a fair well on the south flank of the dome in its No. 4 West-Schenck, an old well deepened to 3,167 feet. It came in flowing an estimated 450 bbls. with one joint of screen set. The oil tested 21 gravity at 80 degrees.

A small well also was added at Lockport, Calcasieu Parish, Louisiana, in Vacuum Oil Co.-Gulf Refining Co.'s No. 3 Miller, a former producer deepened to 5,071 feet. This well came in flowing an estimated 1,200 bbls. of pipe line oil daily but soon fell off to around 400 bbls. of fluid showing 30 per cent water.

Other Completions

The remaining completions for the most part were small pumpers: Republic Production Co.'s No. 22 Dolbear, Hull, an old well deepened, flowing 450 bbls. daily, 2,834 feet; Gulf Production Co.'s No. 8 Chambers, South Liberty shallow sand area, flowing 5 bbls. daily, 847 feet; Big Six Oil Co.'s No. 2 Stovall, Hull, pumping 60 bbls. fluid, 25 per cent oil, 258 feet; Deutser Oil Co.'s No. 18 Trustee, Batson, pumping 10 bbls. net oil, 1,074 feet; East Batson Oil Co.'s No. 16 Stateland, Batson, pumping 5 bbls. net oil, 914 feet; Gulf Production Co.'s No. 50 Davis, Big Creek, flowing 125 bbls., 3,678 feet; same company's No. 42 Davis, Big Creek, an old well deepened, pumping 155 bbls., approximately 3.885 feet; Rex Petroleum Co.'s No. 1 Prairie Narroni, Edgerly, deepened to 4,767 feet, flowing 150 bbls. fluid, 15 bbls. net oil; Drysdale & Savoy's No. 3 Hill, Edgerly, flowing 800 bbls. fluid, 25 bbls. net oil, 2,778 feet, and Ratcliff Oil Co.'s No. 11 Martin, Jennings, a workover, pumping 60 bbls. net oil, 1,781 feet.

Comparatively little hole was made on drilling operations of most companies in the Gulf Coast during the week and few new tests were started. Many companies shut down all drilling not only for Christmas day but for several days. In addition to this, operators have been unable to keep sufficient crews in the field because of the influenza epidemic, and in many cases rigs have been idle because whole crews have been confined.

Daily Average Production

Daily average production of coastal fields the past week increased 4,669 bbls. to a total of 138,642 bbls. This increase was reflected almost entirely in two fields, Blue Ridge and Pierce Junction, of coastal Texas. South Louisiana fields continued steady. Despite additional increases in the new Bruner district at Luling, Southwest Texas as a whole declined in daily average production. Figures for the Gulf Coast and also for Southwest Texas for the week by fields are:

GULF COAST

Texas

Allen Dome	6
Barbers Hill	960
Batson	1,296
Big Creek	2,497
Blue Ridge	6,310
Brenham	150
Boling	2,370
Damon Mound	650
DeWalt	4,651
Fannette	....
*Gay Hill	....
Goose Creek	6,470
High Island	2,458
Hull	10,147
Humble	3,621
Jasper	10
Long Point	20
Markham	275
Nash Dome	1,050
North Dayton	677
Orange	3,201
Orchard	148
Pierce Junction	13,471
Raccoon Bend	1,025
Saratoga	963
Sour Lake	3,021
So. Liberty & So. Dayton	6,431
Spindletop	36,832
West Columbia	7,335
Total this week	116,045
Total last week	111,404
Increase	4,641

South Louisiana

Anse LaButte	45
Atchafalaya	500
Edgerly	1,029
Evangeline	949
Hackberry	4,934
Lockport	4,047
Loreauville	....
Sorrento	1,173
Starks	832
Sulphur	3,500
Sweet Lake	1,100
Vinton	4,458
Welsh	30
Total this week	22,597
Total last week	22,569
Increase	28
Total Gulf Coast	138,642
Total last week	133,973
Increase	4,669

Southwest Texas

Dale	705
Gonzales	215
Kingsville	268
*Luling	20,893
Lytton Springs	1,143
Refugio	539
Somerset	1,909
Mirando	12,996
Medina County	30
McMullen	50
Total this week	38,748
Total last week	39,048
Decrease	300

*Includes Bruner, 8,194; Caldwell County, 7,827; Guadalupe County, 4,262; Larremore, 250; Yost, 360.

Barbers Hill—Chambers County

Humphreys Corp.'s No. 1-C Kirby has reached the deep pay sand on the southeast flank of the dome, finding the sand at 5,170-78 feet and cementing casing at 5,170 feet. This is the first test to reach the sand since the completion several months ago of Bennett Petroleum Co.'s No. 1 Smith, which came in flowing initially 4,000 bbls. daily as the best producer ever completed in the field. The latter company's No. 2 Kirby, 100 feet north of the No. 1 Smith, is drilling at 5,272 feet, the depth at which No. 1 Smith was completed, but has not picked up the sand yet. Humphreys Corp.'s No. 6-B Kirby is drilling shale and lime at 4,435 feet. Its No. 1 Cornelia Barber has been delayed by stuck drill stem, total depth of the hole being 2,199 feet. Joe Bashara's No. 1 Tarbutton is drilling gumbo at 2,840 feet. Bennett Petroleum Co. is ready to spud in on No. 1 Means.

Yount Lee Oil Co.'s No. 1 Chambers on the southwest side of the dome is drilling shale at 4,297 feet. Its No. 2 Richardson is in sand and lime at 1,654 feet.

Blue Ridge—Fort Bend County

Gulf Production Co.'s No. 16-B Blakely on the east side of the dome is drilling shale at 3,947 feet. Sinclair Oil & Gas Co.'s No. 3 Davison, an old well deepened to 4,321 feet, tested salt water and in an attempt to set a packer to shut this off lost the packer and is fishing. South Texas Petroleum Co. has made location for No. 3 Lafferty. Its No. 4 Blakely, a former well, is drilling deeper at 3,746 feet. Humphreys Corp.'s No. 3 West-Schenck on the south side of the dome is drilling at 3,505 feet. This company also has made location for No. 5 West-Schenck, 175 feet east of No. 4, a producer.

Navarro Oil Co.'s No. 8-A Robinson, northwest flank, found the salt at a total depth of 3,031 feet but is plugging back to a formation showing some oil which was passed up by the test.

Big Creek—Fort Bend County

With the completion the past week of two wells by the Gulf Production Co. there now is only one rig running at Big Creek, this being The Texas Company's No. 4 Wheat, which is drilling gumbo at 2,884 feet. Gulf Production Co., however, is rigging up to deepen its Nos. 23 and 24 Davis.

Nash—Fort Bend and Brazoria

Humble Oil & Refining Co. and Rycade Oil Corp.'s No. 1 Wisdom on the south flank of the dome is in a sand showing oil at a total depth of 5,174 feet and is reaming to set casing to test. This test is 800 feet out from other tests drilled on the south side of the dome. Rycade's No. 13 Wisdom is drilling hard lime at 4,312 feet and No. 24 Wisdom is drilling hard, sandy lime at 4,254 feet.

Hardin County Dome

Rio Bravo Oil Co. has made location for No. 135-B in the B.B.B.&C. Survey, Saratoga, and is rigging up. Theis Oil Co. has abandoned in shale its No. 9 Jackson, Sour Lake. Two small pumpers were completed at Batson and with a third test pumping salt water there are no drilling rigs in Batson.

Pierce Junction—Harris County

Abercrombie & Harrison's No. 3 Ritter, north edge extension well, is drilling sand and lime at 3,744 feet. Shaw-Texas Exploration Co.'s No. 2 Fitzsimmons tested salt water at 3,843 feet and is drilling deeper in sand and shale at 3,912 feet. Rio Bravo Oil Co.'s No. 6-A Settegast, an old well deepening, is drilling at 3,831 feet.

On the east flank, Navarro Oil Co.-Texas Exploration Co.'s No. 10 Dooley, is drilling hard lime at 3,460 feet. Navarro's No. 3-A Cain is drilling shale showing dead oil at 4,923 feet. Navarro-Humble Oil & Refining Co.'s No. 1 Dooley, still is trying to clean hole to deepen. Gulf Production Co.'s No. 2 Fitzsimmons-Hamman is drillnig at 1,880 feet and its No. 7 Cain is drilling at 4,305 feet. Gulf also has made location for No. 27 Taylor. H. R. Cullen's No. 5 Howe is down 5,475 feet.

Moody Corp.'s No. 4-B Settegast, wildcat on the southwest flank of the dome drilled to 3,793 feet in gumbo and lime but is sidetracking at 3,405 feet.

Goose Creek—Harris County

Gulf Production Co.'s No. 13 Paddoc-Smith is drilling below 2,349 feet and its No. 35 Stateland Oil Co. at 2,184 feet. Humble Oil & Refining Co.'s No. 74 Simms-Smith, a wildcat northeast of the field, is drilling sand and shale at 6,138 feet. This company's No. 10 Jones Saturland is drilling at 2,517 fet.

Spindletop—Jefferson County

Yount Lee Oil Co.'s No. 21 Gladys City is drilling gumbo and lime at 3,225 feet. A rig is up to deepen No. 39 Gladys City, a former well. No. 53 Gladys City is milling out to deepen and No. 73 Gladys City, a new test, is driling gumbo and lime at 2,695 feet. No. 74 Gladys City is in gumbo and lime at 1,355 feet.

On the McFaddin lease, Yount Lee Oil Co.'s No. 10 is drilling shale at 4,369 feet. No. 50 is reaming at 4,266 feet to set casing. No. 88 is drilling sand at 2,537 feet and No. 89 is in shale and lime at 2,745 feet. Rigs are up for Nos. 90 and 91 McFaddin.

This company's No. 2 fee is drilling sand at 3,054 feet and its No. 1 Davis is in sand at 5,953 feet.

Gulf Production Co.'s No. 17-A Marrs McLean tested salt water at 5,087 feet and will deepen. L. A. Painter's No. 2 Gordon is drilling below 3,847 feet.

Hull—Liberty County

Empire Gas & Fuel Co. has set casing to test sand at 3,746 feet. Gulf Production Co.'s No. 68 Phoenix is being rigged up to pump and No. 92 Phoenix is drilling below 1,543 feet. This company's No. 19 Scarborough is bailing to test at 3,827 feet. Humble Oil & Refining Co.'s No. 24 Guedry is washing at 2,972 feet, and a rig is up to deepen this company's No. 3 Hooks-Spell. Republic Production Co.'s No. 25 Dolbear is drilling at 2,409 feet, and a rig is up to deepen No. 27 Dolbear.

South Liberty—Liberty County

Four tests in the shallow sand area recently opened had screen set or were ready to drill plug to test as the week closed. These were Gulf Production Co.'s No. 1 Marrs McLean at 824 feet; Sun

(Continued on Page 118)

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Failure in Southeastern New Mexico

Vernal Monocline Well in Utah Drilled Deeper Still Shows Saturation. Small Colorado Completion

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Dec. 29.—Several failures in southeastern New Mexico marked the week's developments in the Rocky Mountain area. The Navajo Oil Co.'s No. 1 Goard, on the Vaughn structure in Guadalupe County, struck the granite wash at 3,075 feet, and Cranfill & Reynolds' No. 1 State, on the west side of the Jal high, was abandoned at 3,500 feet. Marland Production Co.'s No. 1 Slattery in the northern part of Lea County, also was a failure. The Midwest Refining Co.'s discovery well on the Hobbs high and the Gypsy Oil Co.'s test in the Eunice district both have developed water, the former below the oil horizon.

Utah supplied some interest in the Western Venture Corp.'s No. 1 Krumvieda on the Vernal monocline which was drilled a few feet deeper and continued to show saturation. The water from above will be cased off and a test made before drilling deeper.

Colorado had one small well completed in the Florence-Canon City district. The Continental Oil Co. concluded the deal with the Union Oil Co. of California whereby it takes over the latter's properties in the Rocky Mountain States on January 1. The Uncompahgre Oil & Gas Co.'s test in Montrose County is showing 1 bbl. of oil per day in the Sundance.

The Texas Production Co. and White Eagle Oil & Refining Co., under a joint bid of 21¾ cents premium were awarded the contract by the Department of the Interior for the Government's royalty oil from Salt Creek. Wyoming had no completions during the week and the Ohio Oil Co.'s well on the Shoshone Dome near Cody is showing water in the upper Embar.

New Mexico

Several failures in southeastern New Mexico were reported this week. The Navajo Oil Co.'s No. 1 Goard, NE cor., Section 10-2n-17e, on the Vaughn structure in Guadalupe County, encountered the granite wash and was dry and abandoned at 3,075 feet. It had no shows of either oil or gas. The elevation of this well was 5,975 feet. It has been drilling at intervals for more than two years. In Lea County, Cranfill & Reynolds' No. 1 State, NE SE NE, Section 23-26-36, was abandoned at 3,500 feet. This well is in the Jal district, 1½ miles west and one-fourth of a mile south of the Marland Production Co.'s No. 1 Eaves, the big gas well, and apparently defines the boundary of the productive area on the northwestern side. The elevation above sea level is 2,918 feet, and it topped the salt at 1,835 feet, and passed out of it at 3,020 feet. It topped the lime at 3,083 feet. The Marland Production Co.'s No. 1 Slattery, SW cor. NE, Section 7-22-34, in the San Simon district, 35 miles to the northwest of the Lea-Winkler Counties boundary, encountered sulphur water at 4,155 feet and was abandoned at that depth. The elevation of this well was 3,519 feet and it topped the salt at 1,615 feet and bottomed it at 3,635 feet. The C. E. Reynolds Drilling Co.'s No. 1 Anderson, C SE, Section 29-13-37, in the Tatum area in northern Lea County and 35 miles north of the Midwest's No. 1 State on the Hobbs high, the nearest producer, which was reported last week preparing to plug, was abandoned at 5,235 feet total depth. It topped the salt at 2,320 feet, and went out of it at 3,570 feet. The top of the lime was at 4,775 feet, and the elevation was 3,905 feet.

The Midwest Refining Co.'s No. 1 State, NE cor., Section 9-19-38, on the Hobbs high in Lea County, which averaged 696 bbls. a day on a 15-day test from a total depth of 4,214 feet, after plugging back from 4,221 feet, and listed as a completion, was again deepened and drilled to 4,245 feet and encountered sulphur water, the fluid rising 3,000 feet in the hole. It has been plugged back to 4,220 feet and water shut off. The Marland Production Co.'s No. 1 Meyer, SW cor. NW, Section 26-20-37, in the Eunice district, ran into an air pocket at 2,950 feet. The pressure blew the tools up the hole where they lodged, but were recovered and it is drilling ahead at 3,050 feet. This well is running high and is being closely observed. The same company's No. 1 Lynn, NW cor. SE, Section 26-23-36, in the Ochoa district, had an additional 1,000,000 feet of gas at 3,381 feet, and shows of oil in several streaks of lime. It gauged 25,000,000 feet of gas at 3,208 feet. The Texas & Pacific Coal & Oil Co.'s No. 1 State, SE cor. SW, Section 22-23-36, has rotary rigged up and is drilling a water well, and the Ohio Oil Co.'s No. 1 State, SE SW, Section 9-19-38, on the Hobbs high, is moving in. The Gypsy Oil Co.'s No. 1 Ramsey, SW cor., Section 34-21-36, on the Eunice high, which had considerable gas in several horizons and small shows of oil, ran into salty sulphur water at 3,907-10 feet and is plugging back from a total depth of 3,959 feet. The flow of gas was as high as 30,000,000 feet at one time. This company's No. 1 H. T. Mattern, SW cor. SE, Section 24-21-36, 3 miles northeast of the Ramsey well, is building rig. The footage is 330 feet from the south line and 2,310 feet from the east line.

The Midwest Refining Co.'s No. 19 Farnsworth, SW SW, Section 12-26-37, east of the Jal district, is idle at 3,877 feet while the crew is assisting at No. 13 Farnsworth, SE NE NE, Section 13-26-36, three-fourths of a mile to the east and one-fourth of a mile south, which is rigging up and drilling a water well. The Texas Production Co.'s No. 1 Cagle, NE SW, Section 9-26-37, is drilling at 3,400 feet. It had a second show of oil at 3,350-59 feet. Above this horizon it had a large flow of gas which was mudded off. Same company's No. 1 Shepherd, SE cor. NE, Section 6-26-37, is drilling at 3,020 feet in lime, and its No. 1 Beulah Lynch, NW cor. SE, Section 34-20-34, is spudding at 70 feet. The Skelly Oil Co.'s No. 1 Joyner, NE cor. SE, Section 26-25-36, bailed to 300 feet off bottom when it had to shut down for fuel. Total depth is 3,259 feet. A. D. Morton's No. 1, C NW, Section 29-11-38, is shut down at 1,110 feet, and the Maljamar Oil & Gas Co.'s No. 2 Pearsall, NE NE, Section 33-17-32, is bottomed at 3,150 feet with 400 feet of salt water from horizon at 2,998 feet in the hole. The water could not be bailed down and it is probable that casing will be run. Hill & Abel's No. 1 Maechtel, SW cor., Section 5-26-33, is drilling at 3,210 feet in anhydrite, and Henderson, Dexter & Blair's No. 1 McDonald & Jewett, SE cor., Section 18-20-34, is drilling at 485 feet in the red beds. The Empire Gas & Fuel Co.'s No. 1-C State, SW cor., Section 12-21-34, is shut down at 1,670 feet in the red beds. The 10-inch was set at 1,665 feet.

Chaves County

In Chaves County, L. B. Tannehill's No. 1 Butler, SE cor., Section 15-12s-24, 10 miles south of Roswell, is a location. Its footage is 150 feet each way from out of the corner. Snowden & McSweeney's No. 1 Merchant, NW NW, Section 27-15-23, on the Coontail Dome, is fishing for tools. Total depth is 3,500 feet and it has been straightreaming.

In De Baca County, the Transcontinental Oil Co.'s No. 1 McWhorter, SW NW, Section 6-3s-22, is running 15½-inch casing at 860 feet total depth.

In Eddy County, Sullivan and Randall have made a location in the NW NW, Section 19-29-30, in the Twin Mounds district southeast of the Artesia Pool, and George F. Getty, Inc.'s No. 1 Bates & Martin, C SE SW, Section 31-20-29, in the same area, is drilling at 300 feet. Flynn, Welch & Yates' No. 1 Jackson, C NE, Section 13-17-30, northeast of the Artesia Pool, is drilling at 3,175 feet. In the Artesia area, Flynn, Welch & Yates' No. 56, Section 6-19-28, is drilling at 1,815 feet. The 10-inch was set at 217 feet and the 8¼-inch at 723 feet. R. D. Compton's No. 15 Vandergriff, SE Section 1-18-27, is drilling at 1,100 feet.

A. H. Smith and A. T. Crosby, employes of the Phillips Petroleum Co. at its casinghead gas plant at Artesia, suffered injuries and burns in an explosion which wrecked the engine room. Estimated damage to the plant was $15,000.

Utah

The Western Venture Corp.'s No. 1 Krumvieda, NW SE NW, Section 6-5s-21e, on the Vernal monocline, in Uintah County, Utah, which last week was reported in a saturated sand at 1,278 feet, was drilled to 1,282 feet and is still in the sand which was topped at 1,265 feet (corrected) and showing saturation for the entire distance. The hole was drilled into the sand wet and the 6¼-inch casing has been underreamed and lowered to 1,264 feet where it will be cemented before making a test. Reports from the well are that the oil is light and green in color and that it may make a commercial producer when the water is shut off. If not a good well, it will be drilled deeper as this is believed to be the top sand of a series 300 to 500 feet thick as indicated by the log of the Reed well drilled several years ago 200 feet southeast of the Krumvieda well and nearer the sand outcrop. The drilling is all in the Tertiary formation and the company has 20,000 acres on the monocline.

The Signal Petroleum Co.'s No. 1, NE SW, Section 7-21-19, on the Crescent Dome in Grand County, is resuming at 2,475 feet. This well was drilled to that depth several years ago by the Sandburg Petroleum Co. and was recently taken over by the Signal Petroleum Co. The objective is the Dakota at 3,000 feet and the McElmo expected under 4,000 feet. The 10-inch casing is being run. The Navajo Petroleum Co.'s No. 1 State, SW SE, Section 2-20-21, on the Cisco Dome, is bottomed at 2,840 feet on top of the objective sand and preparing to drill in. Just above the present depth it showed some gas. The Utah Southern Oil Co.'s No. 1-A J. L. Shafer, Section 36-26-20, Cane Creek Dome, is drilling at 2,578 feet in salty lime in a wet hole, the water coming from horizon at 2,502 feet.

San Juan County

In San Juan County, the Boulder Knoll Oil & Gas Co.'s No. 1 Endter, NW NW, Section 17-34-25, near Monticello, is preparing to resume on January 1. Last July this well had a show of gas, estimated at 5,000,000 feet, at 2,640 feet, followed by salt water which rose 900 feet in the hole. There was 325 feet of open hole and operations were suspended until a string of 6¼-inch casing could be purchased and delivered. The gas has continued to flow ever since and piped off a short distance. The hole caved and the gas now is estimated at 500,000 feet. The Continental Oil Co.'s Boundary Butte test in Section 22-43-22, is drilling at 4,525 feet in gray lime. In Wayne County, the Phillips Petroleum Co.'s No. 1 Shick, Section 16-27-16, Barrier Creek Dome, is resuming at 4,275 feet in lime after being shut down for repairs. It is believed to be nearing the objective horizon. In Uintah County, the Utah Southern Oil Co.'s No. 1 Farnsworth, Section 29-4s-1e, Pleasant Valley Dome, set the 10-inch at 1,800 feet and mudded and has resumed drilling in shale.

Colorado

The deal reported last week in which the Continental Oil Co. was negotiating for the purchase of the oil properties of the Union Oil Co. of California in the Rocky Mountain area, was concluded and contracts signed. The transfer will take place as of January 1, 1929, and the Union will retire from this district though it is not anticipated that there will be much change in the operating personnel. The principal operation is in the Wellington-Fort Collins Pools in northern Colorado, and the Continental will maintain district offices at Fort Collins. The purchase included the whole or greater part of the productive acreage in eight proven fields with 52 wells capable of producing 15,000 bbls. per day. The Colorado properties include the producing wells, acreage, two gasoline plants and equipment on the Wellington and Fort Collins Domes. The production at present is around 2,500 bbls. per day, but the wells, it is understood, could be made to produce 3,500 bbls., the Union having had no disposition to increase production at present prices. The cities of Fort Collins and Cheyenne use natural gas from the Wellington Dome. These two structures embrace all the light oil properties acquired.

The other fields are black oil producers in Wyoming and the wells are shut in. These include 15 wells in the Maverick Springs Pool in Fremont County; 2 wells at Circle Ridge in Fremont County; the discovery well in the Lake Creek Field in Hot Springs County which came in at 3,720 feet for 500 bbls.; 1 well which came in for 400 bbls. on the South Sunshine structure in Park County; 1 small well on the North Sunshine structure, and 2 gas wells on the Lance Creek Dome in Niobrara County. The terms of the deal were not disclosed. President S. H. Keoughan, of the Continental company, stated that his company was desirous of building up crude oil reserves for the future and indicated that no extensive development was contemplated at this time. In as much as only one or two wells have been drilled on several of the structures, the possible ultimate recovery of oil is not definitely known, though there are many proven locations in the various fields.

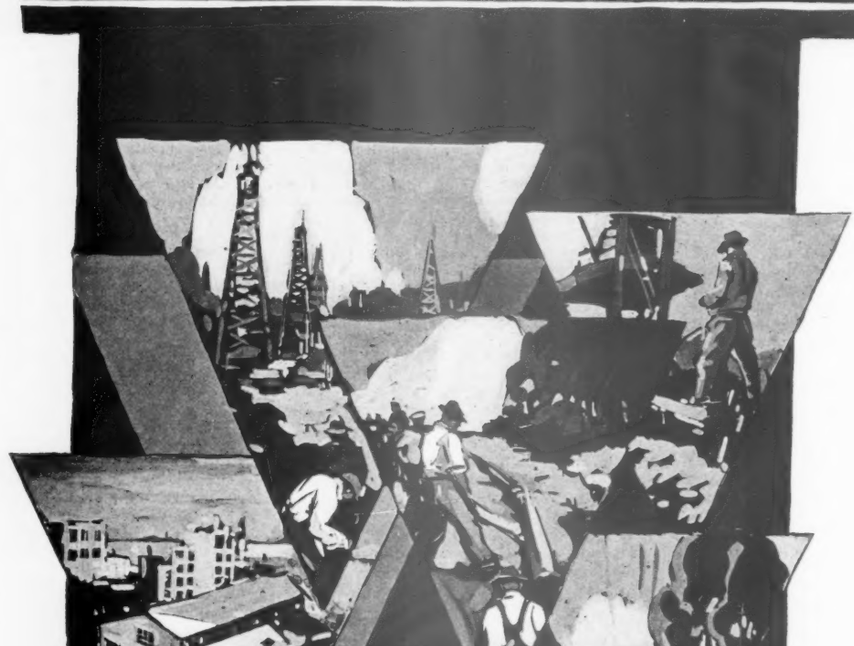
Drilling Operations

Drilling operations in Colorado slowed up considerably on account of the holidays and quite a few of the wildcats will not resume until after the first of the year, while some will remain shut down until spring. The only completion for the week was in the Florence-Canon City district in Fremont County. Donnelly Brothers' No. 1 Owens & Bolagna, SE SE, Section 7-19-69, in the south field, was completed at 2,025 feet with an initial production of 35 bbls. B. O. Bunker's No. 1 Stroiner, NW NW, Section 5-19-70, in the Canon City area, struck a 10-foot vein of anthracite coal at 1,200 feet which may prove more valuable than an oil well. Fremont County produces a large quantity of bituminous coal, but this is said to be the first time anthracite has been found. There is some anthracite in northwestern Colorado, but it is not being mined due to its remoteness from the railroad, and in the Crested

(Continued on Page 122)

XUM

FROM WELL TO METER



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California Production Shoots Upward

Large Number of Wells to Be Completed in January. Curve May Show Temporary Fluctuations but Trend Higher

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Dec. 29.—State production showed another substantial increase during the past week and with a large number of new wells scheduled for completion during January we may anticipate a continuation of this upswing for some time. The production curve may show temporary fluctuations but the tendency should be upward due to development work at Santa Fe Springs, Long Beach, Elwood Terrace, Lawndale, Potrero, Ventura Avenue and possibly Kettleman Hills during the latter part of the year. The Midway-Sunset Field is also expected to show increased production although this work may be retarded due to the potentially productive acreage being closely held by major companies in large blocks. It is impossible at present to predicate California's 1929 peak production with any degree of accuracy. The deep Buckbee zone at Santa Fe Springs cannot possibly become the factor in State production which engineers assigned it a month or two ago due to the limited amount of oil sand present. This zone will not exceed 150 feet in thickness and will consequently show a rapid decline following maximum development. The intermediate Nordstrum horizon, on the other hand, approximates 450 feet in thickness on the apex of the structure and should consequently prove an important factor. It is the general consensus that Santa Fe Springs will never reach the engineers' estimates of 300,000 bbls. per day within the time specified by the technical subcommittee appointed by Santa Fe Springs' operators a few months ago. It must be remembered, however, that there is an excellent possibility of securing production from the bottom of the Buckbee zone down to approximately 8,000 feet.

May Mean New Work at Long Beach

One of the most interesting developments in California during the past week was the coring of a promising oil sand in two extension wells in the Long Beach Field. The two wells were G. A. Langstaff's No. 1 Bixby, south of the Pacific Electric Railroad track in the extreme western part of the field, and the General Petroleum's No. 1 Ransome, in the Los Cerritos or northwest extension of the Long Beach Field. Both projects are of extreme importance and while neither is assured of production the outlook is quite favorable. The importance attached to the showings logged lies in the fact that considerable new work will get under way if commercial production is secured. The General Petroleum encountered the oil sand in No. 1 Ransome at 6,416 feet and the bit was still in the pay at 6,540 feet. The oil sand picked up in this well is not solid but rather alternates between oil sand, gray sand and shale. If commercial production is ultimately developed in this well at least 100 new drilling projects will be started in the Long Beach Field within 30 days after the initial completion. The Los Cerritos, or northwest extension of the Long Beach Field, has never been thoroughly tested for deep production although several dusters were drilled out around the edge. The showings encountered in No. 1 Ransome are therefore of special importance both to those interested in the possibilities of this area and to the industry in general because this town lot area will become the scene of another intensive drilling campaign if later developments warrant.

Los Cerritos Deep Production

Attention has been directed for several months to the possible existence of deep production in the Los Cerritos area and it would not be surprising if the General Petroleum is ultimately successful in its attempt to extend the western limits of deep production. G. A. Langstaff's No. 1 Bixby presents a difficult problem for petroleum engineers to explain as this outpost is supposed to be definitely off structure and consequently outside the limits of production. The Standard staked Langstaff to some dry hole money several months ago in exchange for a major portion of the Bixby lease held by the latter. It was a long shot but justified the expenditure because of the acreage involved. The log of Langstaff's No. 1 Bixby records minor showings practically all the way down from the grass roots but the only showing which justified a production test was picked up at 6,677 feet. Continuous coring between 6,677 feet and 6,709 feet revealed the existence of a fairly good oil sand streaked at infrequent intervals with shale. The 32 feet of zone opened looked so promising that Langstaff is making preparations to land a string of pipe preparatory to an early test.

Santa Fe Springs

Production at Santa Fe Springs continued its upswing which started several weeks ago and a check of development work under way indicates the probability of a substantial gain during the next several weeks due to the anticipated completion of a large number of wells. The Union Oil Co.'s No. 14 Alexander, which came in last week flowing 8,500 bbls. per day, produced 8,908 bbls. during the past 24 hours and although the output is cutting 31 per cent water, due undoubtedly to mechanical trouble as this was a combination job, the well will be permitted to continue on production indefinitely as the water is free and easily trapped out. The Union has eight other wells scheduled for completion within two weeks and it is possible the company's pipe line department will be running 25,000 bbls. of oil out of this field before January 15. The Shell Oil Co. finished two new wells during the past week and increased its daily production 4,240 bbls. These two completions, Nos. 15 and 16, were located on the Golay lease, the former showing an initial daily production of 1,560 bbls. from 5,246 feet and the latter 2,680 bbls. per day from 5,270 feet.

The General Petroleum finished a good well when No. 178-A Santa Fe Community was put on production at 5,510 feet, the hole having been finished with an 8⅝-inch oil string cemented through perforations at 4,933 feet. This new well tanked 3,440 bbls. of 34.9 gravity oil during the initial 24-hour test but built up the following day to 4,085 bbls., the cut declining from 21 per cent to 2 per cent. This well was followed into production by No. 153-C Anderson, which came in flowing 105 bbls. per hour from 4,929 feet. The oil is exceptionally clean and tests 35.6 degrees. York & Lockhart recompleted their No. 1 McKeon doing 1,209 bbls. of 34.6 gravity daily after redrilling and deepening it to 5,727 feet. This well, originally completed several weeks ago, was adversely affected by the Bell View's gasser, with the result that production declined to about 500 bbls. daily and necessitated the addition of a little more hole to stimulate production by offsetting the channelling of oil and gas to its Bell View well near by. The Richfield Oil Co. finished its first completion at Santa Fe Springs when No. 1 Howard was turned loose from 5,745 feet. This new well, which was finished in the deep Buckbee zone and tanked 6,840 bbls. of 34 gravity oil during the initial 24-hour test, was followed into production by No. 2 Howard, which came in doing 8,000 bbls. daily from the deep zone. The Richfield has four other projects in this field scheduled for completion within 10 days, one of which, No. 1 Wardman, should be turned loose within 48 hours. The Universal Consolidated Oil Co. chalked up the largest completion when No. 2 O'Connell was brought in flowing 7,460 bbls. of exceptionally clean 35.1 gravity oil daily from 5,826 feet. This company has been successful in its development work at Santa Fe Springs, having already finished five wells in the deep zone. The Bandini Petroleum's No. 7 was wet on a preliminary production test at 5,515 feet and although it flowed at the rate of 1,800 bbls. a day it was subsequently killed for corrective work.

Long Beach

Five new wells were chalked up in the Long Beach Field, none unusually large. The Richfield finished two wells and expects to have several more on production soon. The company's latest acquisitions to its producers were No. 2 Connett, which came in flowing 1,220 bbls. daily from 6,597 feet, and No. 4 Lekas flowing at the rate of 1,000 bbls. daily from 6,828 feet. No. 2 Connett is on a 7½-acre lease northeast of Reservoir Hill. The Richfield's geological department deserves commendation for this completion as the property was quitclaimed some time ago by another major operator. The Shell company, which changes its official name after the first of the year to the Shell Oil Co., has 25 wells drilling ahead be-

(Continued on Page 113)

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S-T-R	Depth	Status
California Western Oil Co., No. 1 Elkins, Ventura Co.	28- 4-19	2,951	testing
Exline, Emma, No. 1 Saticoy, Ventura Co.	33- 3-21	2,412	fishing
Ohio Oil Co., No. 1 Saticoy, Ventura Co.	32- 3-21	4,490	br. sh. drilling
Standard, No. 5-9 Saticoy, Ventura Co.	1- 2-22	4,014	hd. sd. drilling
Petroleum Sec., No. 1 Diablo, Ventura Co.	26- 5-18	6,513	abandoned
American Oil Co., No. 1 Camarillo, Ventura Co.	33- 2-20	646	hd. sd. drilling
Star Pet. Co., No. 2 Canet, Ventura Co.	13- 3-23	6,775	suspended
Bolsa Chica, No. 1 Temescal, Ventura Co.	3- 4-13	Rig	suspended
Miley, E. J., No. 2 Casitas, Ventura Co.	12- 5-21	785	sd. sh. drilling
Shell, No. 1 Marr, Simi	31- 3-17	962	sd. sh. drilling
Continental, No. 1 Sulphur Mountain, Ventura Co.	21- 4-22	3,060	br. sh. drilling
Continental, No. 2 Sulphur Mountain, Ventura Co.	22- 4-22	3,140	br. sh. drilling
Milham Explt'n., No. 1-A Buttonwillow, Kern Co.	8-28-23	4,662	gas well
Milham Explt'n., No. 2 Buttonwillow, Kern Co.	8-28-23	2,730	gas well
Milham Explt'n., No. 3 Buttonwillow, Kern Co.	8-28-23	2,694	gas well
Milham Explt'n., No. 4 Buttonwillow, Kern Co.	6-28-23	2,670	gas well
Milham Explt'n., No. 5 Buttonwillow, Kern Co.	6-28-23	2,500	gas well
Milham Explt'n., No. 6 Buttonwillow, Kern Co.	8-28-23	2,676	gas well
Milham Explt'n., No. 7 Buttonwillow, Kern Co.	6-28-23	2,720	suspended
Milham Explt'n., No. 8 Buttonwillow, Kern Co.	16-28-23	4,500	suspended
Doheny-Stone, No. 1 Salisbury, Kern Co.	7-29-24	4,631	fishing
Southern Calif. Gas Co., No. 1 Buttonwillow, Kern Co.	4-28-23	4,272	suspended
Southern Calif. Gas Co., No. 2 Buttonwillow, Kern Co.	27-28-23	Rig	suspended
Lincoln Drlg. Co., No. 1 Buttonwillow, Kern Co.	6-28-23	480	sd. sh. drilling
Richfield Oil Co., No. 1 Semitropic, Kern Co.	21-26-22	4,760	set 6⅝-inch
Richfield Oil Co., No. 2 Semitropic, Kern Co.	36-27-23	.....	location
Pacific Eastern, No. 1 Union Ave., Kern Co.	6-30-28	5,640	suspended
Pacific Eastern, No. 2 Union Ave., Kern Co.	6-30-23	4,500	suspended
Pacific Eastern, No. 3 Union Ave., Kern Co.	6-30-28	4,443	gas, shut in
Pacific Eastern, No. 5 Union Ave., Kern Co.	5-30-28	4,991	suspended
Stabler, W. W., No. 1 Comanche Point, Kern Co.	23-32-29	2,959	gr. sh. drilling
General Pet., No. 3 Edison, Kern Co.	5-30-29	3,221	hd. sd. drilling
Cymark Oil Co., No. 1 Edison, Kern Co.	24-29-29	Rig	rigging up
Midway Northern, No. 1 Edison, Kern Co.	29-29-30	3,780	br. sh. drilling
Deizel, S. A., No. 1 Delano, Kern Co.	4-26-27	3,193	hd. sd. drilling
Elmer Oil Co., No. 1 Shafter, Kern Co.	8-28-25	5,078	sd. sh. drilling
Standard, No. 1 San Emidio, Kern Co.	35-11-22	3,793	fishing
Union, No. 1 San Emidio, Kern Co.	5-10-21	1,408	bl. sh. drilling
Perry, C. V., No. 1 McFarland, Kern Co.	34-26-26	1,890	bl. sh. drilling
Fresno Madera Oil Co., No. 1 Clovis, Fresno	18-12-21	4,194	suspended
Currency Pet. Co., No. 1 Vineyard, Fresno Co.	28-21-14	950	sd. sh. drilling
Thomas Pet. Co., Well No. 1, Fresno Co.	33-22-16	.....	location
Union, No. 1 Huasna, San Luis Obispo	34-32-15	3,232	fishing
Union, No. 1 North Huasna, San Luis Obispo Co.	12-32-14	2,860	br. sh. drilling
Panorama Oil Co., Well No. 1, San Luis Obispo Co.	7-31-21	3,260	br. sh. drilling
Turman, T. H., Well No. 1, San Luis Obispo Co.	13-32-22	Mtl.	building rig
Sequoia Oil Co., Well No. 2, San Mateo Co.	16- 7- 5	1,605	suspended
Sunset Pacific, No. 1 Saratoga, San Mateo Co.	13- 7- 4	Rig	suspended
Shell, No. 1 Butts, San Mateo Co.	16- 6- 5	3,368	abandoned
Shell, No. 3 Petaluma, Sonoma Co.	29- 5- 6	2,125	hd. sd. drilling
Calhoma Oil Co., No. 1 Livermore, Alameda Co.	9- 3- 3	1,350	suspended
Foster & Hammill, Well No. 1, Alemeda Co.	21- 3- 3	Rig	suspended
R. Y. Hanlyn, Well No. 1, Alameda Co.	3- 5- 3	951	hd. sd. drilling
Shell, No. 1 Guadalupe, Santa Barbara Co.	36-10-35	Rig	rigging up
Shell, No. 1 Goleta, Santa Barbara Co.	6- 4-30	886	sd. sh. drilling
Standard, No. 1 Point Conception, Santa Barbara Co.	.....	.....	location
Standard, No. 1 Point Arguello, Santa Barbara Co.	X- 7-35	298	sd. drilling
Bankline Oil Co., No. 1 Mesa, Santa Barbara Co.	X- 4-27	.....	location
Tepesquit Oil Co., Well No. 1, Santa Barbara Co.	3- 9-32	2,710	suspended
Becker, Geo. F., No. 1 Summerland, Santa Barbara Co.	33- 4-25	3,090	suspended
Continental, No. 1 Carpenteria, Santa Barbara Co.	33- 4-25	3,440	br. sh. drilling
Southwest Prod. Co., No. 1 Gillam, Santa Barbara Co.	2- 4-28	1,992	suspended
Colus Oil Co., Well No. 1, Colusa Co.	31-15- 4	380	redrilling
Nuna Oil Co., Well No. 1, Colusa Co.	19-15- 5	400	hd. sd. drilling
Superior Oil Co., No. 1 Calivada, Colusa Co.	31-15- 4	1,011	suspended
North Counties Oil Co., Well No. 2, Humboldt Co.	36- 2- 1	2,205	suspended
Humboldt Oil Co., Well No. 1, Humboldt Co.	6- 2- 1	3,041	redrilling
Kuhns, H. L., Well No. 1, Merced Co.	9-12- 9	1,545	hd. sd. drilling
Angiola Oil Co., No. 1 Angiola, Tulare Co.	27-22-23	1,014	hd. sd. drilling

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Hurst Oil Co., No. 1 Inglewood, Los Angeles Co.	28- 2-14	Rig	rigging up
Mont. Park Oil Co., No. 1 Browning, Monterey Park	26- 1-12	4,420	suspended
Mont. Park Pet. Co., No. 1 Jepson, Monterey Park	25- 1-12	3,937	suspended
Dollar Oil Co., No. 1 Bell, Los Angeles Co.	22- 3-12	2,915	cleaning out
Associated, No. 1 Taylor, Los Angeles Co.	33- 2-12	5,620	sd. sh. drilling
Rio Grande, No. 1 Downey, Los Angeles Co.	34- 2-12	Rig	rigging up
Empire Drlg. Co., No. 1 Bell, Los Angeles Co.	14- 2-12	5,122	br. sh. drilling
Continental Oil Co., No. 1 La Mirada, Los Angeles Co.	10- 3-11	5,418	sd. sh. drilling
Shell, No. 2 Mission, San Fernando	4- 2-15	5,692	plug 4,685
Security Pet. Co., No. 1 Lynwood, Los Angeles Co.	13- 3-13	5,333	suspended
Richfield, No. 1 Maywood, Los Angeles Co.	13- 2-13	1,243	hd. sd. drilling
Easton & Smith, No. 1 Calabasas, Los Angeles Co.	19- 1-17	2,982	suspended
Russell Oil Co., No. 2 Joughin, Los Angeles Co.	25- 3-17	1,021	br. sh. drilling
Mallory, Ellis, No. 1 Manhattan, Los Angeles Co.	30- 3-14	125	suspended
Pomona Oil Co., Well No. 1, Los Angeles Co.	32- 1- 8	1,081	hd. sd. drilling
Anchor Oil Co., No. 1 Puente, Los Angeles Co.	19- 2-10	4,820	suspended
Richfield Oil Co., No. 1 Puente, Los Angeles Co.	9- 2-10	3,092	sd. sh. drilling
Calif. Eastern, No. 1 Wickham, Los Angeles Co.	32- 5-17	2,906	hd. sd. drilling
The Texas Company, No. 1 Anaheim, Orange Co.	35- 4-10	3,045	hd. sd. drilling
Bastanchury Ranch Co., Well No. 1, Orange Co.	21- 3-10	Rig	suspended
Mesa Pet., No. 1 Newport, Orange Co.	21- 6-10	2,416	hd. sd. drilling
West. Drlg. & Prod. Co., No. 1 Newport, Orange Co.	18- 6-10	4,045	br. sh. drilling
Hall Pet. Co., No. 1 Murrietta, Riverside Co.	23- 7- 3	931	cleaning out
Hemet Pet. Co., No. 1 Ward, Riverside Co.	9- 5- 1	3,060	hd. sd. drilling
Davenport O. & G. Co., No. 1 San Marcos, San Diego Co.	30-12- 8	880	hd. sd. drilling
Turner, S. S., No. 1 Escondido, San Diego Co.	25-12- 3	1,527	suspended

Muskegon Gets Three Good Producers

Completions Located Between Proven Area in Muskegon and Laketon Township Indicate Two Sections Are Connected

By Special Correspondent

MUSKEGON, Mich., Dec. 31.—Daily production of the Muskegon Field may be doubled by the completion of three new oil wells which will make from 400 to 2,000 bbls. a day as initial producers, according to present indications. The largest of the three is the Hugattie Oil Co.'s No. 1 Dick, NW SE, Section 12-10-17, Laketon Township, which flowed 500 bbls. in a 3-hour test made yesterday. Lack of additional field tankage or facilities for piping the oil to the Dixie Oil Co.'s storage tanks made it necessary to shut the well in immediately after this test. It is estimated that the Dick well may make between 1,500 and 2,000 bbls. a day when allowed to flow steadily for 24 hours or more. It was completed at 2,036 feet in the Dundee pay sands.

Nelson and Witt, local operators, drilled their No. 1 Andree on the adjoining property to the west into the same pay sands yesterday and it was flowing at the rate of 20 bbls. an hour last night and increasing. This well was drilled only 6 inches into the pay sands at 2,046 feet and will be deepened today.

The Concord Oil & Gas Co.'s No. 1 Lewis, SW NW, Section 7-10-16, Muskegon Township, located less than half a mile from the two new producers in Laketon Township, is making about 400 bbls. of oil a day and has an open flow of gas estimated at 3,000,000 feet a day. It was completed at 2,018 feet in the Dundee pay sands.

All three wells are located in the territory lying between the previously proven areas in Muskegon and Laketon Townships and tend to prove that the two producing areas are connected in the lower formation in a single pool.

The new wells are among the largest which have been completed in the Dundee formation since November 1, when several large wells were brought in at about 2,060 feet in Muskegon Township.

A good show of oil and gas was encountered in another Muskegon County wildcat well in the upper Traverse formation, but the well was drilled into salt water within a few feet and is drilling at 1,850 feet to the lower formations in search of production.

The new show, which would have made several barrels of oil a day if shot, was encountered at 1,815 feet in the Sun Oil Co.'s No. 1 Grelewicz, SE NE Section 26-11-16, Dalton Township. The show was similar to that reported to have been struck in the Shifting Sands Oil Syndicate's No. 1 fee, SW NW Section 20-11-15, Cedar Creek Township. Their show was at 1,817 feet and water was struck within a few more feet of drilling. The Shifting Sands well has been shut down until after the holidays.

Harper & Newman's No. 1 Cook, NE NE Section 2-9-16, Fruitport Township, was drilling at 1,762 feet with no show of oil in the upper Traverse formation.

Operations have been resumed on the Fink Development Syndicate's No. 1 Nash, SW NW Section 20-9-14, Ravenna Township, where a show of oil was encountered in the upper Traverse formation at 1,880 feet and the well was drilled into the salt water. It is being bailed out and will be drilled to the lower formations.

Red Rock Encountered

The red rock was encountered in the Creek Land Development Co.'s No. 1 Wittels, NE NE Section 34-11-15, Cedar Creek Township, at 1,015 feet and the well is now drilling at 1,275 feet.

The Eureka Oil & Gas Co.'s No. 1 Jane Featherstone, SW SW Section 35-11-16, Dalton Township, was drilling at 938 feet with no signs of the red rock.

J. F. Carpenter's No. 1 Jens Jensen, SE NE Section 2-11-15, Cedar Creek Township, is drilling at 250 feet, and the White River Oil Corp.'s No. 1 Montague, SW SW Section 21-12-17, Montague Township, is setting a second string of casing at 300 feet to shut off a new flow of water.

The Cloverville Oil Co. is moving in a rig for its No. 1 Arthur Born, NE NE Section 12-9-16, Fruitport Township, location of which was announced last week.

One new location for another wildcat in Dalton Township was announced, P. G. Fennell's No. 1 H. Gustafson, SE SE Section 19-11-16, Dalton Township. A rig is moving in for this well.

It was also reported that a new wildcat will be drilled in Section 17 of Cedar Creek Township.

Western Michigan

The only wildcat near the pay sands in western Michigan counties adjoining Muskegon County has been fishing for a drill stem in a crooked hole during the past week. This is Paul Schulte's No. 1 Blanchard, SW SW Section 30-10-10, Nelson Township, Kent County. The bottom is at 2,401 feet just above the Traverse formation.

The Lima Oil Corp.'s No. 1 Atwood, SE SW Section 6-11-13, Ashalnd Township, Newaygo County, will be shut down until after New Year's at least at about 1,920 feet, where casing was set above the Traverse formation.

Two wells are drilling at 1,000 and 1,100 feet, respectively. The former is Edward Duvall's No. 2 Carrie Mears, SW NW Section 31-15-18, Golden Township, Oceana County. The latter is the Muskegon Oil Corp.'s No. 1 Kinstner test, SE SW Section 17-13-17, Grant Township, Oceana County.

Drive pipe was landed this week in the Kenyon Oil Co.'s No. 1 Edward Gould, NW NW SW Section 24-9-10, Courtland Township, Kent County, at 348 feet.

No information was available on the Mid-Continent Development Co.'s No. 1 George Easley, NW NW Section 19-6-11, in Kent County near Grand Rapids except that there were little prospects of success.

Three other wells were shut down: Sankey Oil & Gas Co.'s No. 1 Beem, NW SE Section 24-14-15, Newfield Township, Oceana County; the Pennsylvania Oil & Gas Co.'s No. 1 Bert Snow, NW SE Section 23-15-15, Leavitt Township, Oceana County; and the Muskegon Oil Corrp.'s No. 1 William Kinstner structure test, SE SW Section 17-13-17, Grant Township, Oceana County.

The Sankey-Beem well was shut down at 500 feet and the Pennsylvania-Snow at about 300 feet for the holidays. The Muskegon-Kinstner structure test is shut down for repairs.

Despite the holiday shut down of many of the driling wells in the Muskegon and Laketon Township producing areas there have been two outstanding developments here. One is the completion of a new well on property between present production in the two areas and the other is the announcement of six new locations near the Continental Motors Corp.'s wells which recently extended the Muskegon Township Field nearly 2 miles southea of production.

The new well which helps further establish the belief that the Muskeg and Laketon Township producing are are joined in the Dundee, or lower p sand, is the Hugattie Oil Co.'s No. James Dick, NW SE Section 12-10-1 Laketon Township. It is near the li between the two townships and is t second well to have been brought in a good oil producer on this intermedia territory.

Kelly Goldboss brought in the fir good oil well about half a mile north a east of the new producer. The new w struck oil at 2,036 feet and was shut immediately to allow the installation field tanks. It is estimated from 300 500 bbls. a day from the Dundee form tion.

There are four other wells either cas or drilling into the Dundee pay sands this same unproven territory between t two producing areas. Completion of a within a few days is anticipated.

Two new wells are being started Muskegon Township as a result of t success of the Goldboss-Giles well, S SW Section 6-10-16, which came in as a initial 500-bbl. well in the Dundee forma tion at 2,043-45 feet deep. One of t new wells is to be drilled by Mr. Gol boss on the same Giles lease. The oth will be drilled on the adjoining proper also owned by Charles I. Giles. It w be drilled by the Johnson Oil Refi ing Co.

Possible Extension

New interest in a possible extension the Muskegon Township field to t southeast of the present producing are was aroused with the announcement six new locations in the vicinity of t recently completed Continental Moto Corp. wells in Section 15-10-16.

Rigs have been moved in for three the new locations, two to be new Con nental wells, Continental Motors Corp. No. 8 fee, NW NE Section 22-10-16, a No. 9 fee, SW SE Section 15-10-16. L. Bullock, contractor, has moved in f the Wolfe Oil Co.'s No. 1 Shanks Brot ers, SW SW Section 14-10-16.

The other three locations are: Consol dated Oil Co.'s No. 1 Mary Bolt, NE SW Section 15-10-16; Victor Oil & Gas Co. No. 1 H. F. Croft, NW NE Section 1 10-16; and M. R. Marston and othe No. 1 F. Zelzenick, NW NW Sectio 24-10-16. If Mr. Marston is successf in Section 24 it will be another mile e tension of the field. A rig capable drilling to the Niagara formation if ne essary is being moved in.

Joseph Victor, head of the Victor O & Gas Co. of Holland, announced h would plug his No. 1 Collins, NE S Section 5-10-16, in the Dundee form tion temporarily but would reopen it a drill to the Niagara formation as soo as a larger rig can be moved. This we was reported to have been brought in a 50-bbl. initial pumper in the Dund formation at 2,070 feet. Salt water, how ever, ruined it as a possible producer. I is believed to be an edge well but pro pects for getting something in the Nia ara lime or some other lower producin stratum are considered good in this lo cation.

Six Completions

There were only six new completion in Muskegon Township during the pas 10 days. Two were dry gassers, one i an oil producer, two were dry in th Dundee formation and the fifth struc salt water with a small amount of o and gas in the lower formation.

The Dixie Oil Co.'s No. 2-D Becke SE SW Section 4-10-16, was the on

(Continued on Page 117)

OPENING OF NEW AND IMPORTANT GAS FIELD IN SOUTHERN ALBERTA

By Victor Lauriston

Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Dec. 29.—The feature of recent development in the Canadian West is the opening of a new and important gas field in the Cypress Hills district of southern Alberta, where the Eagle Butte Oil Co., drilling in LSD 3, Section 31-7-4w4, has blown into production with an initial open flow estimated at 40,000,000 feet a day. Production was encountered, apparently in the Dakota sands, at 3,340 feet, and came as a surprise to the operators, who were not looking for anything till close to 3,500 feet. The well started with an estimated flow of 20,000,000 feet a day, which speedily doubled. The location is some 32 miles southeast of Medicine Hat. A control head is being secured, and as soon as the flow is under control, a definite production test will be made by C. W. Dingman of Calgary, federal petroleum engineer. The gas is apparently a dry gas, similar to that of the nearby Medicine Hat Field.

The Cypress Hills structure was mapped in 1927 by Dr. W. S. Dyer of the Geological Survey of Canada, at which time some 80,000 acres were blanketed by the Cypress Hills Syndicate, organized by R. B. Harkness and E. P. Rowe of Toronto. Acreage on the structure was also secured by Imperial Oil, Ltd., though the latter has so far undertaken no drilling. The Eagle Butte Oil Co. drilled its test on Cypress Hills Syndicate acreage, this company being organized by C. E. Roth and W. D. Faurot of Independence, Kans., with head offices at Medicine Hat. The officers of the Eagle Butte Oil Co. are: President, C. E. Roth; first vice president, W. D. Faurot; second vice president, Dr. F. W. Gershaw, Medicine Hat; secretary, H. O. Duggan; treasurer, W. H. Gray. Prior to the Cypress Hills venture, the Roth-Faurot interests had drilled two deep tests in the Medicine Hat Field, and the outfit used there was moved to the Cypress Hills location. The Roth-Faurot drilling operations were primarily for oil. Some gas was encountered in the upper formations, at which time the gas flow caught fire and the rig was destroyed.

The Eagle Butte gasser is apparently one of the largest ever drilled in Alberta, and the reports of the Geological Survey indicate that it has tapped an extensive field. The gas will in all likelihood be utilized primarily to supplement the Medicine Hat supply, but if the field develops to the extent anticipated, the production may be piped to Moose Jaw, Regina and other cities in southern Saskatchewan. The location is fairly close to the Saskatchewan boundary, and about 300 miles from Regina, the furthest market in Saskatchewan.

According to a later official statement the gas was encountered just after the drill passed through the Colorado shales into the Bow Island gas sand, which at this point is, apparently, some 1,200 feet deeper than in the Bow Island Field. Company officials think there is a good chance of securing oil if the test is continued to the Ellis sands, which should be reached at about 3,600 feet.

Turner Valley Field

In the Turner Valley Field southwest of Calgary, Okalta Oils' No. 1, LSD 1, Section 1-20-3w5, is connecting two separators which will be in complete opera-

(Continued on Page 117)

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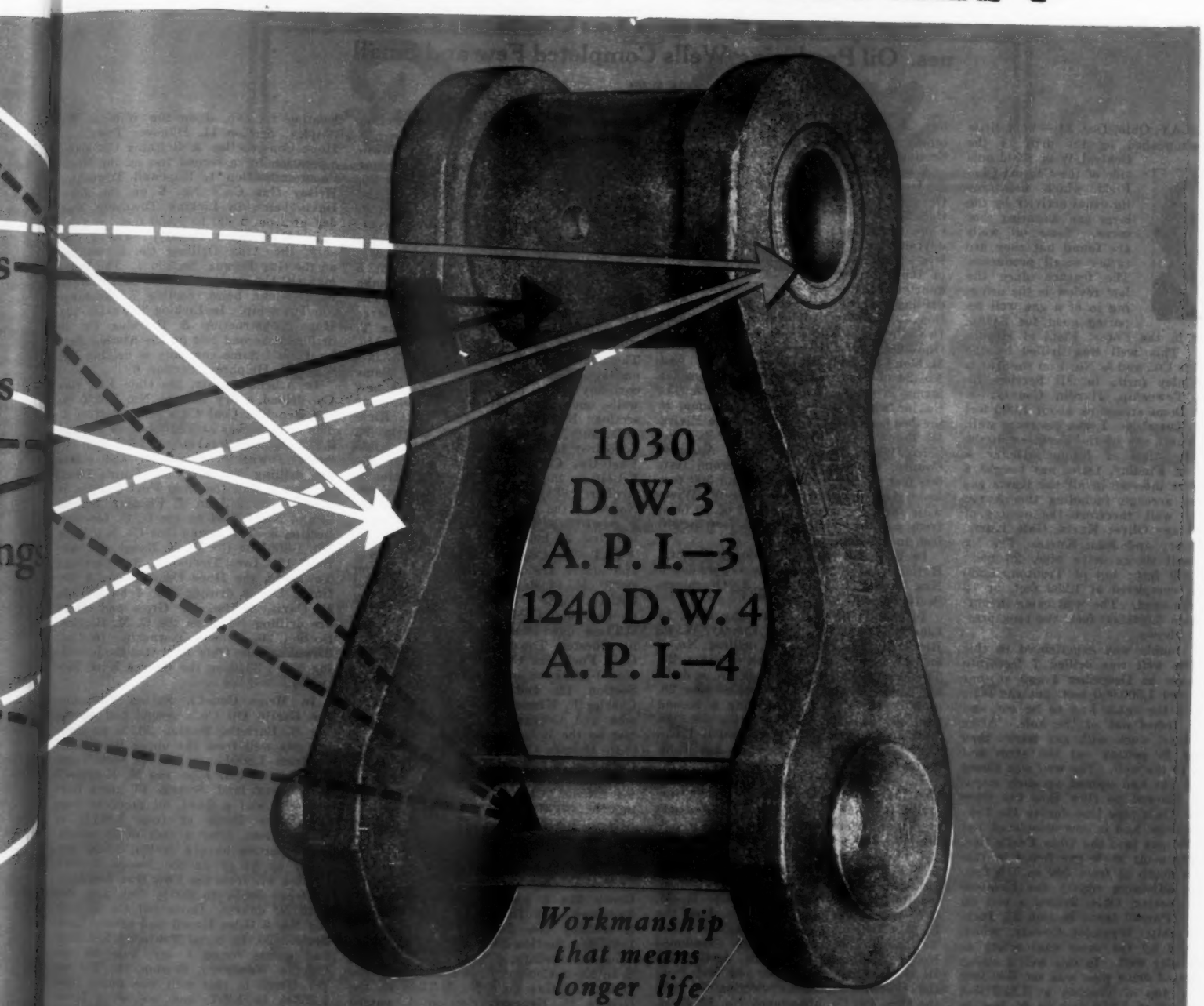

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Central Ohio Busiest in Central West

Activity of Large Operating Gas Companies Continues. Oil Producing Wells Completed Few and Small

By Whit

Staff Correspondent, Central West Fields

FINDLAY, Ohio, Dec. 31.—Very little was accomplished by the drill in the Central West Field outside of the Central Ohio Field, which maintains its usual activity by the large gas operating concerns. Some oil wells are found but they are rather small producers. The feature since the last review is the bringing in of a gas well reported good for 3,000,000 feet in the Forest Field of Hardin County. This well was drilled by the Kurtz Gas Co., and is No. 1 on the Aaron P. McKinley farm, in SE Section 19, Jackson Township, Hardin County, on the Lost Dome structure, about 1,000 feet south of Kurtz' No. 1, the discovery well. Brice Henry, one of the partners in the contracting firm of Kennedy-Henry & Temple, of Findlay, Ohio, has bought a one-quarter interest in all the Kurtz gas wells and acreage, including this Aaron McKinley well, therefore the owners of this well are Olivet Kurtz, Gale Kurtz, Brice Henry and John Kurtz. The log of the well shows drive pipe, 26 feet; casing, 269 feet; top of Trenton, 1,236 feet, and completed at 1,252 feet, or 16 feet in the sand. The well came in naturally with 3,000,000 feet, the rock pressure not shown.

Some trouble was experienced in this hole. The well was drilled 7 feet into the Trenton on December 4 and at that time showed 1,500,000 feet, but the tools stuck and the cable had to be cut and the drill fished out of the hole. After several days' work with gas masks they succeeded in getting out the stem and shutting in the well. The well was closed in each night and opened up each morning and allowed to flow into the Ohio Fuel Gas Co.'s pipe line during the fishing operations, and is now completed and putting its gas into the Ohio Fuel's line. There was some shale gas found in this well at a depth of from 540 to 575 feet.

In the adjoining county the Kemrow Co., of Wooster, Ohio, drilled a test on the Simon Parcell farm, Section 35, Jackson Township, Wyandot County, which was drilled by the same contractors as the McKinley well. In this well a string of 71 feet of drive pipe was set, 330 feet of casing, top of Trenton at 1,336 feet and finished at 1,376 feet or 40 feet in the sand. The well had no showing and was pronounced a dry hole. It is 2 miles straight east of a hole that was recently drilled on the Webber farm, which was also absolutely dry with no show of gas or oil at any time. The McKinley well in Hardin County is given on the oil map as the Frank McKinley lands which lie east of the Patterson Kelley Pike. These lands join the W. F. Kurtz lands on the south of the Kurtz 15-acre strip and west of the Kurtz 180 acres. The McKinley is one of the best gas wells drilled for many years in the old Forest gas area. This is in the eastern portion of the old Lima Field of northwestern Ohio.

Other Lima Developments

In Perry Township, Wood County, Henderson, Messer and others drilled on the J. H. Buckingham farm, Section 7, but found only a 1-bbl. pumper. In Troy Township, same county, between Toledo and Woodville, Charles F. Zeising and others are drilling on the C. J. Miller, Section 4, and R. M. Bell and others are drilling on the E. Hurrellbring, Section 12, same township. In Lake Township, Lantz, Schulte and others are drilling on the Simon Achenberger, Section 32. In Middleton Township, in the north end of the county, H. E. Berry is drilling a second test on his own farm, Section 21. Jameson and others are drilling on the Curtis Jameson, Section 15, Webster Township.

A purely wildcat venture was made by J. Hoffmaster and others of Wooster, Ohio, on the M. Shaufelberger farm, Section 23, Washington Township, Hancock County, and 8 miles north of known production. It was dry at a depth of 1,451 feet. The well is in the northeast corner of the lease, which is in the northeast quarter of the section. L. Cramer is drilling on the John Shank farm, Section 32, Liberty Township, same county. In Allen Township, same county, the Ohio Oil Co. abandoned No. 30 on the Mahlon Decker farm, Section 24, and No. 24 on another of the Mahlon Decker farms, in Section 23. The Oko Oil & Gas Co., of which Mack P. Colt, of Lima, is the head, abandoned No. 1 on the Elvira R. Trout farm, Section 24.

In Washington Township, Auglaize County, the Real Oil Co.'s second test, 600 feet from the south line and 300 feet from the west line of the H. W. Wierwille farm, pumped an initial of 10 bbls. from a total depth of 1,238 feet, or 45 feet in the Trenton.

In Scott Township, Sandusky County, Ruth H. Beatty and others abandoned Nos. 6 and 7 on the C. J. Overmyer, Section 5.

In the Tiffin Field, Murphy Pool, in Liberty Township, Seneca County, W. E. Richards and others are drilling No. 2 on the Lawrence Scherger, Section 27. The Muncy Valley Oil & Gas Co. is drilling a test on the S. Shroder, Section 28, and T. F. O'Brien is drilling a second test on the Milo Saul, Section 36. In Jackson Township, the Columbus-Tiffin Oil Co. is drilling a test on the John Soule, Section 22.

In Oregon Township, Lucas County, the Ohio Oil Co. abandoned No. 19 Gertrude J. Niles, Section 29; No. 7 Koch & Schmidt, Section 27, and No. 6 Andrew L. Metzger, Section 12.

In Ottawa County, Harris Township, in the Elmore Field, Sherman and Richards are drilling No. 9 on the Silas Ames, Section 19. In Clay Township, R. M. Bell and others abandoned No. 1 on the F. W. Riedeman, Section 21. In Allen Township, the same parties abandoned No. 1 Ferdinand Riedeman, Section 16. B. G. Gibbons pulled out old No. 1 on the Florence Simmons, Section 33, and the Ohio Oil Co. abandoned No. 15 E. H. Babcock, Section 34.

Central Ohio

Since the last review of the Central Ohio Field there are reported a total of 26 wells completed, 7 producers with an initial production of 67 bbls., 8 dry holes and 11 gas wells. There are 19 new locations and 25 new wells spudded, a total of 44, brought about by the recent advance of crude prices.

Just at present the Summitt County area is showing the best gas completions, some running to seven figures. One of the best wells was brought in by the East Ohio Gas Co., on the Luna Lake Club property, Section 33, Franklin Township. Same company has a good gas producer in a second test on the Atha Drilling Co.'s property, Section 8, Richfield Township. Same company is drilling on the Mary Kertesz, Section 26, Franklin Township. F. A. Brendall and others, who are running several strings of tools in Franklin Township, found too much water at No. 3 on the Isaac Host farm, Section 27, and it has been termed a failure. This firm is drilling on the Lewis Daily, Section 26, also No. 1 on the T. A. Rennies, and No. 1 on the Mary Miller, Section 29, all in Franklin Township. Wiser Oil Co. made a location on the John F. Hankey, Section 12, Copley Township, and the East Ohio Gas Co. set a stake on the G. Chenoweth, Section 4, Green Township, same county.

In Ashland County, Vermillion Township, the Kemrow Oil Co. got a duster on the Mrs. Marion Glass, Section 23. Robinson and others are working on the John Hawks, Section 35, and M. and S. Bartner are drilling on the John Obrecht, Section 36. In Orange Township, the Logan Gas Co.'s test on the Nettie McFaddin, Section 2, found only about 5 feet of broken sand and failed to make a producer and will be abandoned. The Kemrow Co. struck an unusually large gas producer in No. 2 on the John T. Fluke farm, Section 14, same township. The Logan Gas Co. is drilling No. 1-3,058 on the C. P. Miller, Section 14. Same company made locations for three new wells, one on the Henry J. Weikel, same section; No. 1-3,067 on the Ira C. Richards, and No. 1-3,068 on the Charles N. Schoolroy farm, all in Section 14. Ohio Fuel Gas Co. made a location for No. 1-3,410 on the Royal J. Welch, Section 1. In Perry Township, Curtis and others' No. 6 on the Eliza Devault, Section 20, is reported with a production of 17 bbls. the first 24 hours.

In Lorain County, Carlysle, Daugherty and others are drilling a second test on the P. K. Clark, Section 19. Ohio Fuel Gas Co. made a location for No. 1-3,332 on the John Coghlin, Section 23.

Three new locations have been staked in Chester Township, Wayne County. Ohio Fuel Gas Co. made a location for No. 1-3,407 on the Alice C. Bowman, Section 12, and No. 1-3,406 on the Charles F. Kinney, Section 10, and Harmon and George are starting a second test on the Robert Schmidt, Section 8.

In Holmes County, Prairie Township, the Pure Oil Co.'s No. 4 on the Isaac F. Snyder, Section 18, is reported good for 8 bbls. Ohio Fuel Gas Co. is drilling No. 1-3,379 on the Joseph P. Miller, Section 4. East Ohio Gas Co. is drilling No. 4 on the T. M. Newells, Lot 39, Hardy Township.

In the Cleveland Field, Olmstead Township, Cuyahoga County, L. M. McGrath has a nice gas well on the J. Saunders, Lot 28. Ohio Fuel Gas Co. is drilling No. 3-3,399 on the S. M. Douglass, Section 33. Monroe Township, Richland County.

In Knox County, Brown Township, the Ohio Fuel Gas Co.'s No. 2-3,328 on the George P. Keppert, Section 4, passed through an 8-foot vein of rich stray sand, and it is a very good gas producer. Same company made a location for No. 4-3,408 on the Frank H. Koppart, Section 19. In Howard Township, same company found a dry hole in No. 2-3,333 on the James A. Greer, Section 9.

The only completion reported from Coshocton County was the Ohio Oil Co.'s test on the A. E. Epley farm in Clark Township, with an initial of 2 bbls. from the Berea sand at from 721 to 739 feet.

In Summitt County, Green Township, G. W. Crouser brought in an excellent gas well on his own farm, Section 18.

In Licking County, Fallsburg Township, the Preston Oil Co.'s No. 3 N. E. Morris, Section 10, is reported good for 15 bbls. at depths of from 756 to 776 feet. In Perry Township, the same company's No. 10 on the James Wright, Section 16, produced an initial of 10 bbls. at from 709 to 720 feet, and staked locations for Nos. 11, 12 and 13, same farm. Whitehall Gas Co. is drilling No. 8 Albert Ashcroft, Section 2. H. C. Farmer is drilling No. 5 Roy Baughman, Section 1, and the Settles Oil Co. is starting No. 5 Jacob Lethers, Section unknown. Koontz & Shultz are drilling No. 6 Joseph Chaney, Section 1, and the Preston Oil Co. is drilling a test on the G. C. Mauk, Section 18. Everette Gas Co. made a location for No. 3 on the William W. Shipley, Section 11, Hanover Township. Hope Construction & Refining Co. made a location for a second test on the Noah Coomes, Section 1, Hopewell Township. Heisey Gas Co.'s No. 6 on the John Davis heirs, in Licking Township, was dry at from 1,330 to 1,350 feet.

In Muskingum County, Falls Township, the Atha Drilling Co. is drilling on the Guy Fergus, Section 8. The Bateman Oil Co. made a location on the Mary A. Bateman heirs, Section 7, Washington Township. In Licking Township, the Hope Construction & Refining Co. is drilling a second test on the Almeda Butler farm. Same company is drilling No. 4 W. E. Helphrey, Section 6.

In Athens County, the Ohio Fuel Gas Co. drilled a dry hole in No. 1-3250 on the Republic Coal Co.'s land, Section 1. Top of sand was at 3,810, bottom of sand 3,817 feet and total depth 3,913 feet. In Ames Township, Orondorff and others are drilling No. 3 on the Lunna Dean, Section 2, and the Ohio Fuel Gas Co. is drilling No. 2 John T. Fleming, Section 3, and No. 1-3364 on the G. O. Linscott, Section 5. The Logan Gas Co. is drilling No. 1-3061 on the W. E. Baughman, Section 12, Lee Township. In Carthage Township, the Hope Construction & Refining Co. is drilling No. 4 on the Ida B. Davis, Section 18. Gross and others are drilling No. 2 on the C. M. Higgins, Section 20, Athens Township. In Lodi Township, the Ohio Fuel Gas Co. is drilling No. 1-3340 on the George King, Section 7.

In Meigs County, Sutton Township, the Bartin Oil Co.'s second test on the Ira S. Bartells, Section 36, is an average gas well from the upper Berea sand at from 1,860½ to 1,880½ feet. Tyree and others' No. 1 on the M. Ebersbach and others' land, Section 13, got a light gas well and a 5-bbl. oil producer from the upper Berea at from 1,811½ to 1,828½ feet, after a shot of 30 quarts. Same parties have a 10-bbl. initial producer at No. 3 on the Joseph Stobart, Section 17, from the Cow Run formation at from 588½ to 606½ feet, and shot with 50 quarts. Davis Oil Co. is drilling No. 6 Giles Hysell and others' farm, Section 20. In Scipo Township, Lee Stout and others found a dry hole on the Charles Woodyard, Section 34. The upper Berea in this well was found from 1,253½ to 1,277, and the lower Berea at from 1,330½ to 1,334½ feet and total depth 1,340 feet. Ohio Fuel Gas Co. drilled a light gas well at No. 1-3241 on the Herbert Barnhart, Section 27, Bedford Township.

In Jackson County, Franklin Township, the Ohio Fuel Gas Co. has a gas well above the average in No. 2-3331 on the J. E. Hines, Section 2. In this well the Clinton was found from 2,694½ to 2,703½ feet, where a break was found to 2,705 feet; then a larger gas flow was found from 2,705 to 2,712 feet and total depth of hole is 2,714 feet. Same company has a small showing of gas in No. 1-3313 on the W. S. McClure, Section 28, but the well has not yet been completed.

In Vinton County, Knox Township, Townsend and others struck a fair gas well on the David Huston, Section 1, in the Berea sand from 1,048½ to 1,049½ feet.

Cashdollar and others are drilling on the Jacob Nichter, Section 3, Lawrence Township, Stark County. In Gallia County, Addison Township, the Atha Drilling Co. is drilling on the Marilla Miller, Section 20.

In Guernsey County, Valley Township, the Buffalo Gas Co. has what shows for a small gas well on the John Verb, Sec-

(Continued on Page 160)

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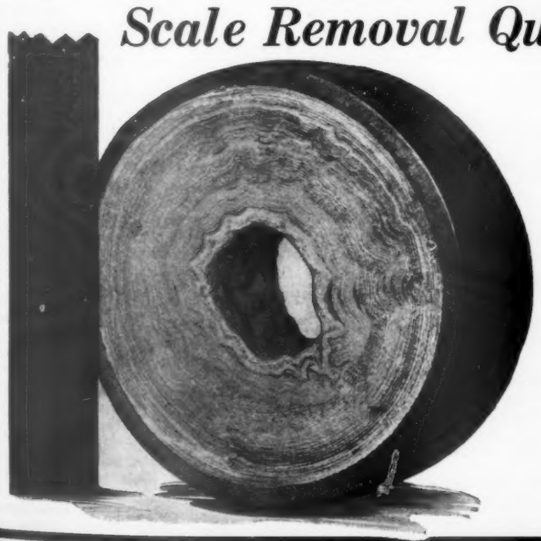

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Only Fair Producer in Eastern Fields, West Virginia and Southwest Pennsylvania Being Mostly Gassers

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Dec. 29.—At intervals there are dull weeks in the Eastern fields but none just quite as dull as the week just closed. There were fewer wells completed and in the list but one fair producer, located in the deep sand territory in southeast Ohio.

The West Virginia and southwest Pennsylvania fields contributed to the completed list scarcely anything but gassers. In all sections a good deal of work was suspended until after the first of the year. There are now no sections in the East that call for speedy development. Nearly all the work under way and starting is located in defined territory and can wait until some time in the future.

Best Producer for Week

In the southeast quarter of Section 5, Licking Township, Muskingum County, the Hope Construction & Refining Co. completed and shot in the Clinton sand a second test on the Joseph Varner farm. It produced 170 bbls. the ensuing 24 hours.

In the southeast quarter of Section 6, Harrison Township, Perry County, R. C. Miller & Co.'s test on the R. D. Brown farm, produced 35 bbls. the first 24 hours after completed and shot in the Clinton sand. In the southeast quarter of Section 18, same township, and county, the Ohio Fuel Gas Co. has completed in the same formation a test on the M. T. and F. C. Moore farm. It is a gasser good for 500,000 feet.

New Work in Meigs County

In the northeast quarter of Section 26, Sutton Township, Meigs County, the Pure Oil Co. has started to drill a second test on the John Deer farm. In the northwest quarter of Section 2, same township, the Davis Oil Co. has started to drill another test on the Gile Hysell farm.

In Section 10, Franklin Township, Monroe County, the Draper Farm Oil Co. has a fair pumper at a second test on the Catherine Draper farm. In Section 28, Wayne Township, the Equable Oil & Gas Co.'s test on the R. A. Stemper farm is a 2-bbl. pumper. In Section 11, Franklin Township, the Savasie Oil Co. is due in the sand on the H. and L. Cross farm.

In Section 29, Barlow Township, Washington County, the Pure Oil Co.'s test on the Robert Hayes farm is a duster. In Section 1, Fairfield Township, the Ohio Fuel Supply Co. had the same luck at a second test on the Bartley H. Welsh farm. In Section 26, Wesley Township, Ernest Gibson has a 5-bbl. pumper (dark oil) at a second test on the D. R. Van Warmer farm. In the same township, the Ohio Fuel Supply Co. is drilling on the Frank Gill farm.

Fair Producer in Hocking County

In the southwest quarter of Section 24, Washington Township, Hocking County, the Gordon Oil Co. has completed No. 7 on the Robert Stone farm. It produced 75 bbls. after completed and shot in the Clinton sand.

In the northeast quarter of Section 1, Perry Township, Licking County, Kundtz & Hultz have a duster in the Clinton sand at No. 6 on the James Chaney farm. In Perry Township, M. F. Whitehill has completed in the same formation No. 3 on the Alice Ashcraft farm. The showing of oil is so small as scarcely to pay to operate it.

In Meigs County, Lee Stout and others have completed a test on the Charles Woodward farm. It is a duster in the Berea grit. In Section 27, Jackson Township, Knox County, the Arkansas Fuel Oil Co. has completed a fair producer in the Clinton sand on the Howell-Rinehart farm. In Section 10, Fallsbury Township, Licking County, the Preston Oil Co.'s No. 3 on the N. E. Morris farm is a 3-bbl. pumper in the Berea grit.

West Virginia

On Poca River, Poca district, Kanawha County, the Chartiers Oil Co. has completed in the Big Lime formation a test on the W. H. Painter farm. It is a fair gasser, located 1,500 feet west of the same company's test on the J. F. Haynes farm.

In Lee district, Calhoun County, the Ohio Fuel Oil Co. has a Big Injun sand gasser on the Armenia Elliott farm. In Center district, same county, W. H. Bickel has a 5-bbl. pumper in the Salt sand on the Minnie Hamilton farm. In Lee district, the Hope Natural Gas Co. has a gasser in the Big Injun sand on the John Slider farm. In Sherman district, W. S. Dailey & Co. have a gasser in the same formation on the Frank Poling farm.

In Reedy district, Roane County, the Heck Oil Co. completed a second test on the M. L. Vandevender farm. It is a fair gasser in the Berea grit. In Geary district, I. L. Storts has completed a test on the F. W. Greathouse farm. It is a gasser in the Big Injun sand.

In Murphy district, Ritchie County, C. E. Lamp & Co.'s test on the J. T. Smith farm is a gasser in the Big Injun sand. In Union district, the Pittsburgh & West Virginia Gas Co. has a gasser in the same formation on the E. W. Summers farm.

In Greenbrier district, Doddridge County, J. F. Trainer has completed in the Big Injun sand his No. 6 on the James Kelley farm, good for 3 bbls. a day. In Mannington district, Marion County, the South Penn Oil Co. has completed on the T. B. Yost farm small gasser in the Gordon sand.

Boone County

In Sherman district, Boone Cou the Pure Oil Co. completed in the Be grit Nos. 29 and 34 on the Lafoll Prichard & Robaon tract A, and are good for 1 bbl. and 7 bbls., re tively.

On the Williams Coal Co.'s tract, the same district and county, the company has completed No. 240. a 6-bbl. pumper in the Berea grit. same company's Nos. 33 and 34 on Federal Coal Co.'s property are gassers in the Berea grit.

In Crook district, Boone County, Owens Bottle & Machine Co. has a gasser at No. 5 on the Lenning farm. In Peytonia district, the company has a gasser good for 250 feet at No. 7 on the Safe Deposit Trust Co.'s property.

On McFarlan Creek, Murphy distr West Virginia, the South Penn Oil has completed and shot in the Cli sand No. 71 on the Ritchie Mines tr It is an 8-bbl. pumper. In Walker trict, Wood County, Congdon & Wo yard have cleaned out and shot N 10 and 12 on the Elgie Grant farm, creasing their production from 5 to bbls. a day.

On the Kanawha River, Center trict, Calhoun County, the Hope C struction & Refining Co. has compl in the Big Injun sand a test on Jerome Hardman farm. It is a l gasser. On Bull River, Sherman trict, same county, Godfrey L. C has a gasser in the same formation the C. W. Harris farm. On Sycam Creek, same district, W. S. Dailey Son have a light gasser in the Big jun sand on the Fremont Polling far

Lewis County

In Skin Creek district, Lewis Cou W. M. Smith & Co. have a Fifth duster on the William R. Jewell f In Courthouse district, the Mid P Oil Co.'s No. 5 on the J. P. Cole f is a gasser in the Gordon sand good 250,000 feet.

On Paw Paw Creek, Paw Paw trict, Marion County, the Owens B & Machine Co. has a fair gasser in Gordon sand at a test on the L Toothman farm. In Sherman distr Calhoun County, C. B. Lewis & have the rig completed for a se test on the C. W. Harris farm.

In Church district, Wetzel County, Manufacturers Light & Heat Co. ha duster in all sands on the S. S. K farm.

Marshall and Marion Counties

In Liberty district, Marshall Cou the Manufacturers Light & Heat Co. a gasser in the Gordon sand at N on the August Wendt farm. In M nington district, Marion County, same company completed a test on N. K. Brown farm. It is a gasser the Gordon sand. In Battelle distr Monongalia County, the West Virgi Gas Co. is due in the Bayard sand the M. M. Wise farm.

In New Milton district, Doddri County, the Hope Natural Gas Co. part of the rig material at a location the S. I. Hurst farm. In Grant distr Trainer Brothers are rigging up on O. A. Sheets farm. In McClellan trict, Godfrey L. Cabot is building a on the Ezra J. Smith farm.

In Jefferson district, Lincoln Cou Hobbs Brothers have started to dril the Croft Land Co.'s tract. In U district, the United Fuel Gas Co. started to drill on the C. W. Oxley f In McComas district, Cabell County,

(Continued on Page 96)

EIGHTEEN PRODUCERS COMPLETED IN KENTUCKY-TENNESSEE AREA

By Whit
Staff Correspondent, Kentucky-Tennessee

OWENSBORO, Ky., Dec. 29.—No wells of large production have been found in any part of the State since the last review. A summary of the week's work in the Kentucky fields shows 33 completions, 18 producers with an initial production of 249 bbls., 13 dry holes and 2 gas wells.

County—	Comp.	Oil wells	Prod.	Dry	Gas
Ohio	11	7	113	3	1
Daviess	10	3	60	6	1
Breckenridge	4	4	40	0	0
Barren	3	3	33	0	0
Allen	3	1	3	2	0
McLean	1	0	0	1	0
Hancock	1	0	0	1	0
Total	33	18	249	13	2

Ohio County Wells

The daily average production of the new wells in Ohio County is comparatively small, the best being reported at 25 bbls. initial, the Leeper Oil Co.'s No. 4 on the L. C. McKinley farm, in the Ambrose Pool.

F. M. Sirmans' well on the Friendship Church lot, north of Fordsville, is reported doing 25 bbls. initial.

Claypool and others' No. 8 on the J. L. and J. H. Ralph farm produced an initial of 15 bbls. from a total depth of 525 feet. In this well a string of 492 feet of casing was set, and oil was found at from 505 to 525 feet. Same parties' No. 2 on the L. Reynolds farm, near Deanfield, was a dry hole.

New Domain Oil & Gas Co.'s No. 3 on the F. L. Royal farm, in the Kelley Pool, is a fairly good gas producer, with No. 4 drilling.

Union Trust Co. and others' No. 12 on the south 100 acres of the Bob Hamilton 276-acre farm is reported at 15 bbls., and No. 13 is showing for 20 bbls., and No. 14 drilling. No. 16 on the north 176 acres of the farm is reported close to the pay sand.

The Ohio Oil Co.'s No. 3 on the S. L. Phillips farm, near Aetnaville, is rated good for 10 bbls. No. 4, same farm, is under way.

Creek Drilling Co.'s No. 2 on the D. Westerfield farm, in the Whittaker farm, is reported a duster.

The Wood Oil Co.'s No. 2 Joseph Griffith farm, in the Reynolds area, is reported a gas well with a volume a little better than 1,000,000 feet.

The National Deposit Bank's No. 1 on the P. R. Kelley 40 acres, in the Kelley Pool, came in a dry hole.

S. H. Russell and others' No. 3 on the A. F. Belamy farm is showing for a small pumper, about 3 bbls.

Development is being resumed in the old Hartford Pool, in Ohio County, which many years ago was abandoned because of cheap oil and expensive means of transportation. Lew Bacon and Harry Wolfe, two well-known Toledo oil men, were interested in the development of the old pool, but gave it up owing to the heavy expense of development. Evans-Hendricks and associates, operating the A. A. Carter farm in that section, have drilled into one of the deep pay sands and had a very nice showing and prospects are for a commercial well. This is about 5 miles to the northeast of Hartford. Many years ago two wells in the pool flowed their oil and those now trying to bring the pool to a paying proposition may be surprised by the finding of nice production. The new well so far has shown about 38 feet of sand.

Daviess County Wells

The best completion reported from the Daviess County area is the Jetson Oil Co.'s No. 1 on the W. S. Hinton farm, in the Jones Pool area southwest of Whitesville, its production being 35 bbls. initial. M. B. French and others are drilling No. 3 on another of the W. S. Hinton leases, which showed an excellent volume of gas.

Leeper Oil Co. and others' No. 7 on the Pete Mahlockey farm, in the Brown Pool, is reported good for 20 bbls., not large like the first few wells found on this lease which looked like one of the best in the county.

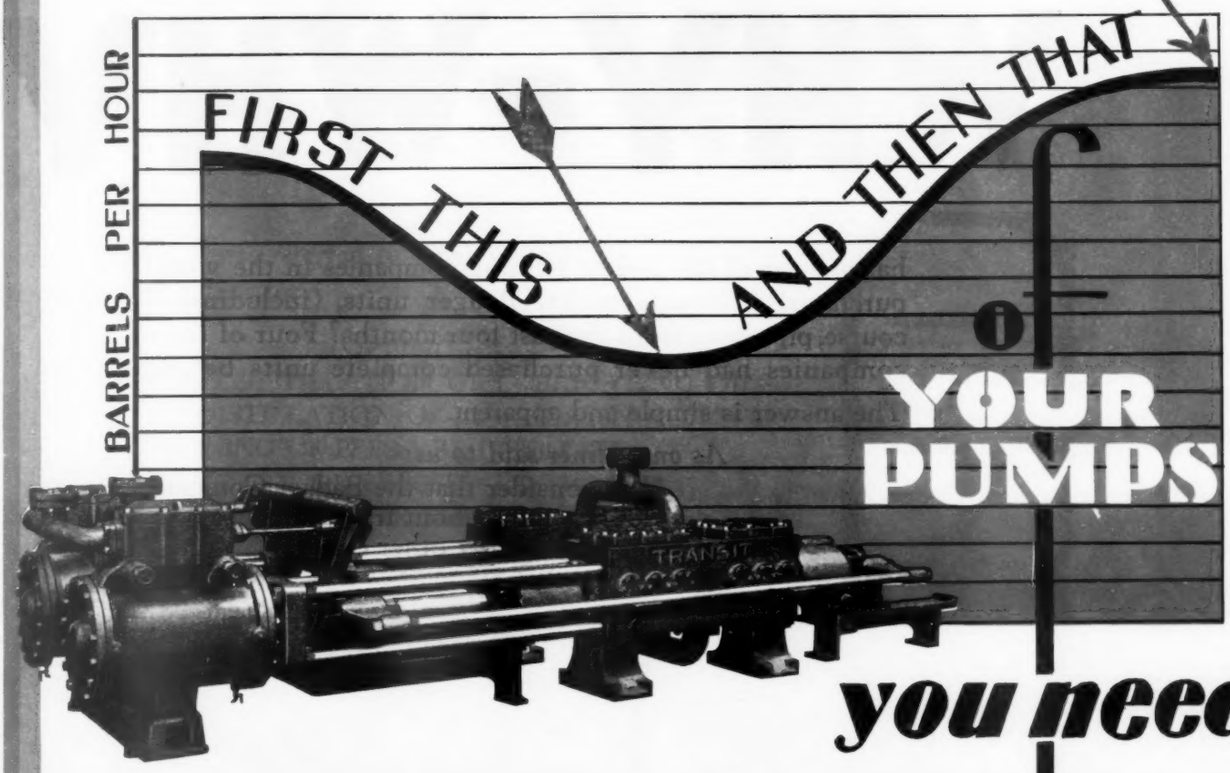
The Kenrock Oil Co. has at last brought in its No. 1 on the Charles Gilmore 54 acres, in the Roby Pool, northeast of Whitesville, and in the northeast corner of the lease, and it is a duster.

Ohio Oil Co.'s No. 3 on the G. A. Weller 200 acres at Locust Grove, near Ensor, is a small pumper, for about 5 bbls.

Maxey, Lewis and Ogle's test on the Arthur Gilmour farm, north of Whitesville, proved a rank duster. Huff and Calderwood have one of the same kind

(Continued on Page 113)

IF YOU DEMAND



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THERE is no industry where the manufacturing conditions are changing so rapidly as in oil refining. This requires the utmost flexibility in your pumping equipment.

If the refiner is to keep financially healthy, he must be in position to meet these changing conditions.

That means flexible equipment.

No type of pumping equipment is so flexible as a steam pump.

Next, we would say, comes the reciprocating power pump. We have reference of course to TRANSIT PUMPS, because you want profitable operation.

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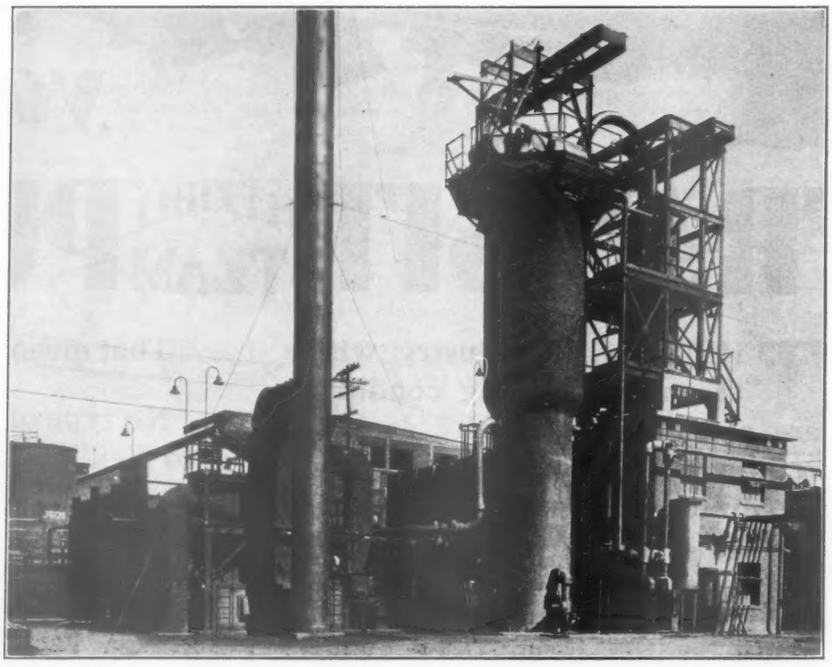
WHY-WHY

have seven of the largest refining companies in the world purchased eighteen complete Badger units, (including, of course, pipe-heaters) in the past four months? Four of these companies had never purchased complete units before.

The answer is simple and apparent.

As one refiner said to us:

"We consider that the Badger Company knows more about fractionating equipment than any other concern."



E.B. BADGER & SONS

NEW YORK TULSA

WHY—WHY

The complete units referred to cover every phase of refining and include plants for:

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REDUCTION OF PRESSED DISTILLATE
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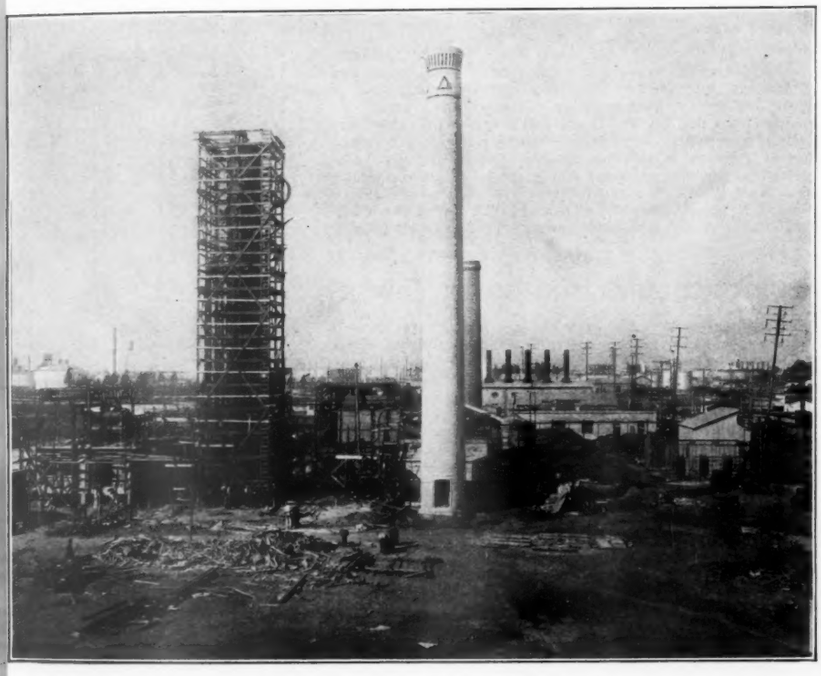

The following Companies are some of those who have purchased BADGER Equipment:

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Tide Water Oil Co.
Anglo-Persian Oil Co. Ltd.
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Marland Oil Co.
Vacuum Oil Co.
Associated Oil Co.
Barnsdall Corp.
Humble Oil & Refining Co.
Tidal Refining Co.
Standard Oil Co. of N. J.
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S COMPANY

LOS ANGELES **BOSTON**

EQUIPMENT AND SUPPLIES

CLAMP QUICKLY STOPS LEAKS IN PIPE LINE

The Miller emergency pipe clamp, manufactured by the Miller Combination Bailer & Pump Co., Sapulpa, Okla., is designed to stop leaks in water, gas, steam or oil lines. It is made of malleable iron of sufficient strength to stand rigid

tests. It is easily handled and put in place quickly. According to the manufacturing company, an old piece of inner tube or a bit of belting makes a satisfactory gasket in stopping a leak with this device. The sizes are made 2 by 4-inch, which weighs 2½ pounds, and 2 by 8-inch, which weighs 5½ pounds.

McLEAN NOW SALES MANAGER

The Ajax Rope Co., Inc., of New York, announces appointment of George W. McLean, Jr., of Tulsa, as its Mid-Continent sales manager. He will be in

George W. McLean, Jr.

full charge of Ajax cordage sales. From 1924 up to 1928, Mr. McLean was associated with the Murray Tool & Supply Co., as district sales manager for the Tulsa district. He already had arranged jobbing distribution for the entire line of Ajax cordage, including bull ropes, catlines and plain laid ropes. Central warehouse stocks of oil country cordage will be maintained in Tulsa and in Houston and Fort Worth, Tex.

BIG PIPE ORDERS RECEIVED

Orders for five new major pipe lines, totaling 174,500 tons of pipe, have been received by the A. O. Smith Corp., Milwaukee, Wis., within the last few weeks. Following are the lines: Texas-Empire line, Tulsa to Lockport, Ill., 636 miles of 12-inch pipe, 70,000 tons; Roxana line, McCamey to Houston, 100 miles of 10-inch pipe, 8,500 tons; El Paso Natural Gas line, Lea County, New Mexico, to El Paso, 205 miles of 16-inch pipe, 23,000 tons; Western Public Service line, Baxter Basin to Salt Lake City and Ogden, 287 miles of 14, 16 and 18-inch pipe, 33,000 tons; new gas line, requiring about 40,000 tons details to be announced later.

JOINS GENERAL AMERICAN

L. A. Belding, for years in charge of forge-welded products made by the American Welding Co., has joined the General American Tank Car Corp., to take charge of the company's high-pressure tank car department.

TRADE LITERATURE RECEIVED

The Landis Machine Co., Waynesboro, Pa., has prepared its illustrated catalog No. 32 of threading machines, stay-bolt threading machines, bolt factory threading machines, automatic forming and threading machines and chaser grinder.

"Engineering Achievements of the Westinghouse Electric & Manufacturing Co. for 1928" is the subject of a special publication issued by the company, whose works and main office are in East Pittsburgh, Pa. Some of the more signal achievements are recounted.

FRICTION REDUCED ON REID PILLOW BLOCKS

Reid pillow blocks equipped with Timken bearings have been designed particularly for oil-field service on reverse and one-way rig shafts, countershafts and similar installations.

The complete unit consists of two Timken roller bearings which are mounted

on a steel sleeve. This tube is threaded and slotted at both ends. Two clamps screw on either end of the sleeve and clamp it firmly onto the shaft. Easily removable guards cover the clamps.

The sleeve and bearings are fitted into an accurately machined cast iron retainer. The outside of this retainer is of spherical section and fits into similarly machined surfaces of a heavy cast-iron two-piece housing. The use of the spherical surfaces permits the bearing to be self-aligning. The bottom and ca held together by four bolts.

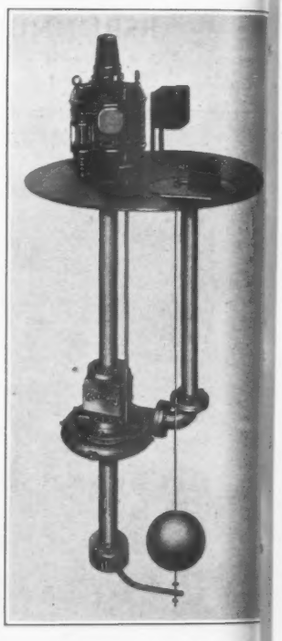
Two adjusting plates, one at each of the retainer and attached to it b cap screws, hold the bearing in p Thin metal shims between the plates the retainer provide means for the n sary adjustment.

These pillow blocks are manufact by the Joseph Reid Gas Engine Co. City, Pa.

NEW SUMP PUMP HAS HOLLOW-SHAFT MOT

The American Well Works, Au Ill., has announced an improved li sump pumps which, besides being controlled, are said to be highly effi and built to stand up under abuse.

The "American" type M.M.D. pump employs a hollow shaft motor this construction, flexible couplings thrust bearings are eliminated. pump shaft extends up through the tor shaft, hence both motor and pump



the same thrust bearing which is n in the upper end of the motor, m adjustments very easy.

The elimination of high motor su is made possible as the pump suppo pipe is bolted through to a cast iron that in turn bolts to the motor. Re less of distortion in the pit cover alignment of the pump and motor i affected.

The pump shaft bearings consist movable bushings. The pit plate, of plate steel, is furnished either or square. The pump may be had f standard settings up to 17 feet in single of duplex units.

PUBLICITY COMPANIES MER

The McCarty Co. and the Robe Berry Co., advertising organizatio Los Angeles, Calif., specializing in nical accounts for the petroleum ind have completed a merger effective uary 2. The enlarged firm retains name the McCarty Co. with Terre McCarty as president and general ager and Mr. Berry as vice presiden chief account executive. All the bu and accounts of the Berry company incorporated into the new organiza

JENSEN PUMPING UNIT REQUIRES MINIMUM OF POWER

The Jensen Brothers Manufacturing Co., Coffeyville, Kans., with export offices in New York City, is making a new straight-lift electric pumping unit of strength and simplicity, and using a minimum of power. It is made in three sizes, No. 10 for 2,000-foot wells, 2-inch tubing; No. 14 for 3,000-foot wells, 2-inch tubing; No. 22 for 5,000-foot wells, 2-inch tubing.

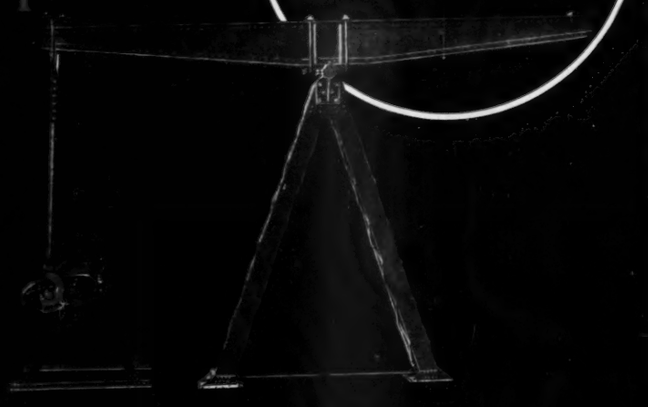
A test with the Jensen unit No. 14 in the Torrence Field in California disclosed interesting facts. The well was 3,780 feet deep, producing approximately 100 bbls. a day through 2½-inch tubing. The Jensen electric unit made 22 strokes a minute and the length of the stroke was set at 26 inches. The machine shouldered this 70 per cent overload without hesitation, using only 5½ horsepower.

These units are said to be as nearly portable as machines of this kind can be, and do not require an experienced power setter to place in position. They are waterproof, so that they do not require housing.

Parkersburg

HAS SERVED THE OIL FIELDS OF THE WORLD FOR THIRTY-ONE YEARS

Reduce Well Expense *with* Steel



THE secret of saving money is in the elimination of buying mistakes. For a sure saving in oil well equipment, select steel.

Parkersburg "A" Frame type Steel Jack Posts and Sampson Posts save you money by reducing your maintenance expense, because they are of all-steel construction.

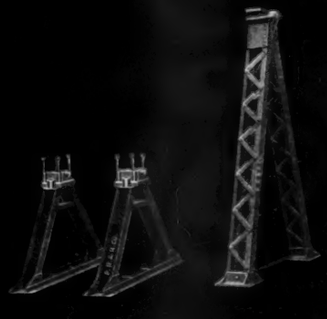
Set on concrete foundations, and with the elimination of sills, this equipment represents a permanent installation at a low cost.

When it is necessary to move to a new location, all material is salvable except anchor bolts in the concrete foundations.

Sampson Posts are furnished in 14 ft. 6 in. and 16 ft. heights. Jack Posts are furnished for 10, 11 or 12 ft. Band Wheels.

The Parkersburg Steel Walking Beam, box girder type, can be supplied in lengths of 24, 26 and 27 feet.

For detailed specifications write for Section "E"—Catalog 26.



Parkersburg Products

- Steel Derricks & Steel Crown Blocks
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- Miscellaneous Drilling Equipment

Check the equipment in which you are interested, tear out and return this page, with your name and address to us, and we will send you complete information on the items checked.

The PARKERSBURG RIG & REEL COMPANY

Executive Offices & Main Plant, Parkersburg, W. Va., U. S. A.

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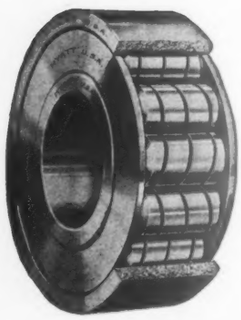
ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

Wherever installed on wheels, drives, shafts, gears, and motors, smooth rolling Hyatts transmit power without effort or waste. Practically frictionless, they avoid the sticking and drag of plain bearing surfaces.

Equipment lasts longer when rugged Hyatts are employed. Immunity from bearing breakdowns insures faster, smoother production. Attention is confined to infrequent lubrications. Labor and maintenance costs are negligible.

Throughout all oil field applications, as in railroad, automotive, mining, manufacturing and agricultural equipment, engineers have found that the Hyattway is the Saving Way.



The Hyatt Roller Bearing with outer race cut away to show construction of roller assembly. Our engineers will gladly submit bearing designs for any application in which you are interested.

HYATT ROLLER BEARING COMPANY
Newark Detroit Chicago Pittsburgh Oakland

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

BE READY TO PLUG

My company is developing an 80-acre lease in the Haskell Pool, Oklahoma. In our first well to the Wilcox sand we got an 80-bbl. well in the first 3 feet of that sand from 1,586 to 1,589 feet. To test the sand further we drilled deeper. At 1,594½ feet we got a 1,000,000-foot gasser. At 1,600 feet we have clean, hard, white sand, evidently entirely out of the pay. The well made 80 bbls. of oil flowing through 2-inch tubing before it was drilled into the gas, but it makes only a small proportion of its oil with the gas blowing through 6⅝-inch casing. The gas pressure is evidently holding or possibly forcing oil back in the formation.

How should we proceed to test the full thickness of the sand, protect the gas and oil against the possibility of encountering bottom water, and eventually produce the oil and gas separately from the same well?—J. H. K.

Probably the best thing you can do in order to protect the oil and gas pays against the possibility of encountering water when you drill through the sand is to be fully prepared to plug off the bottom water. Either lead wool or cement may be used to advantage for this purpose in a hole that has not been shot. If a bottom hole cementing job is resorted to, care should be taken to avoid agitation of the cement by gas or infiltrating water. Any flow of gas into the well should be killed with mud fluid before the cement is run. Under these conditions the use of mechanical plugs would probably be much cheaper than cement.

A more expensive method would be to case off the oil and gas before drilling deeper but this does not appear to be necessary. The usual method is to take the chance of encountering bottom water and then plugging off the water if it is encountered. Having once encountered bottom water at a known depth below the oil and gas pays it should be a simple matter to avoid drilling into the water in later wells.

The question of how to produce oil and gas from the same well where the gas occurs below the oil frequently has been asked this department. It is possible, with the water string set above the oil sand, to run a string of smaller casing with a wall packer set against the break between the two pays. With a bradenhead it would then be possible to produce gas through the inner string and flow oil between the inner and outer strings. The suggestion has been made that where it is necessary to pump the oil it may be possible to run two strings of tubing in the same well, one for oil and one for gas, with a tubing packer on the gas string set just below the oil pay and the oil string with perforations and working barrel run to a point above the packer on the gas string. There are so many mechanical difficulties involved in this arrangement that it is not recommended. The best way to produce oil and gas separately under the conditions that have been described is through separate wells, and by casing off the oil in the gas wells.

ALKALIES FOR CORROSION

We understand that alkalies will prevent the corrosion of iron and steel and are interested in procuring more specific information upon the subject. Can you tell us what alkalies are used, also how and in what amounts they are used to prevent the corrosion of tanks, pipe lines, oil well casing and tubing and boilers and refinery equipment?—B. W. M.

Strong alkalinity prevents certain types of corrosion but alkalinity is not a panacea for corrosion troubles. Under certain conditions it may even stimulate the corrosion. For information upon the principles involved, you are referred to "The Corrosion and Preservation of Iron and Steel," by A. S. Cushman and H. G. Gardner, and to "Corrosion, Causes and Prevention," by Frank N. Speller.

Sodium hydroxide, sodium silicate, and sodium carbonate are generally used as alkaline inhibiters. The quantities used depend largely upon the conditions to be met. Alkalies have not been extensively used in the oil industry to prevent corrosion although such practice has been recommended by the United States Bureau of Mines. This subject is rather involved and would require too much time and space to cover it adequately here. You will do well to consult United States Bureau of Mines Bulletin 233, pages 67, 76, 82 and 112, where the possible uses of alkalies to prevent the corrosion of oil field equipment are described.

DEPTH FOR CUPS

In connection with the problem of deep well pumping can you tell me the maximum depth to which cups can be used in an oil well without collapsing?—D. T. W.

Cups lose their effectiveness and wear rapidly at excessive depths but this department has no information of any certain depth that could be called their collapsing point. Cups have been used to pump wells as deep as 6,000 feet and have also been used to pump against from 400 to 600 pounds back pressure. Their success or failure depends upon many things including the condition of the cups themselves, the condition of the working barrel, the length and rapidity of stroke, the amount of fluid to be raised, the amount of foreign matter in the fluid, the characteristics of the oil, and the amount of water and emulsion present with the oil.

DRILLING BY CONTRACT

Can you tell me on what sort of basis drilling contractors drill wells? I have good reason for believing there is oil under my land, but I am not sure I can stand the expense of putting down a well. They are getting oil at a depth of 2,100 feet about 2 miles from my place. These wells were drilled by a company that does its own drilling. There are no drilling contractors that I know of near here. How do you get into touch with them? Do they charge a fixed price or is it so much a foot, the total amount depending on the depth of the well? Is there any difference in the cost whether you get oil or not?—R. T. E.

Drilling contractors can be employed to drill a well on the footage basis. The cost varies widely, from $1.50 up to $10 or more per foot, depending upon location, depth, method of drilling, etc. However, as a rule the contractor does not build and equip a rig with rig irons and the other necessary equipment, nor does he provide the casing. The contractor often uses his own tools and his own portable drilling machine, but other materials and equipment generally are provided by the operator.

Sometimes it is possible to get a well drilled by giving the contractor an interest in the production.

You can get in touch with drilling contractors by advertising in The Oil and Gas Journal or by answering their advertisements in this publication.

It should be fully appreciated that drilling for oil is a costly and hazardous business that should not be undertaken by those unable to bear the losses resulting from drilling dry holes. On this account it is customary for a landowner to lease his land to an oil company. The company then takes all the risk and pays rental and royalty fees to the landowner.

LOADS ON WIRE LINES

I am a gang pusher and am interested in our safety first work. I would like to obtain information on the following questions:

What is the safe working load and breaking load for a three-quarter inch wire line or tubing line?

If I start out of the hole with 3,000 feet of tubing on three lines and pull 15 thribbles; then take dead line out of center of block and tie to derrick leg and pull 15 thribbles; then take line from derrick leg and tie to bull wheel shaft, giving me one line and pull 15 more thribbles (that is, I pull the remainder of the tubing with one line), I figure that I have practically the same load on the line all the time by decreasing the number of lines in proportion to the decrease in the weight of the tubing. Am I correct?

In pulling tubing with a single line and in pulling it with both ends of the line on the shaft, thus having two lines extending over the crown blocks and down around the block so that the lower side of the block has one thickness of line passing under it, do I have double the strength of the single line? There has been quite an argument among the boys on this point. Some say yes and some say no.

If you can enlighten me on these questions I will appreciate your kindness. —H. W. R.

The safe working load for three-quarter inch tubing lines depends upon the type and kind of line being used. Since the kind of line is not specified there is given for your information the safe working load and the breaking load for different kinds of wire line. Where the size of a wire line for handling heavy loads is limited it is customary to use an improved plow steel line. You should remember that the condition of a wire line plays a most important part in limiting its strength.

For three-quarter inch 6 by 19 Warrington construction regular lay or left lay lines the safe working loads and breaking loads for three-quarter inch tubing lines vary according to the kind of steel as follows:

Kind of steel—	Working load	Breaking load
Crucible cast steel	7,000	35,000
Mild plow steel	8,000	40,000
Plow steel	9,200	46,000
Improved plow steel ...	10,600	52,600

For 18 by 7 nonrotating, nonspinning construction, the safe working loads and breaking loads vary as follows:

Kind of steel—	Working load	Breaking load
Crucible cast steel	3,500	35,000
Mild plow steel	4,000	40,000
Plow steel	4,600	46,000
Improved plow steel ...	5,260	52,600

For all practical purposes you are correct regarding the maintenance of equal loads on the wire line by reducing the number of lines in proportion to the reduction of the weight of tubing being pulled.

In regard to the last part of your question, the two lines over the crown blocks should support twice the load that one line will support. The arrangement that you describe should give double the strength of one line.

SPACING OF GAS WELLS

Would you please inform me upon the prevailing custom regarding the spacing of gas wells producing from the same sand? Is this custom based upon scientific research?—J. N. P.

Many factors enter into the spacing of both oil and gas wells. Depth is one of the important factors because deep drilling is expensive and calls for wider spacing.

The spacing of gas wells in Oklahoma varies from one well to 10 acres up to one well to 40 acres. That is to say, the wells are spaced from 660 feet apart up to 1,320 feet apart. One large gas company recommends that gas wells be drilled not closer than one well to 40 acres in shallow, as well as deep territory. This is based upon business experience rather than upon scientific research.

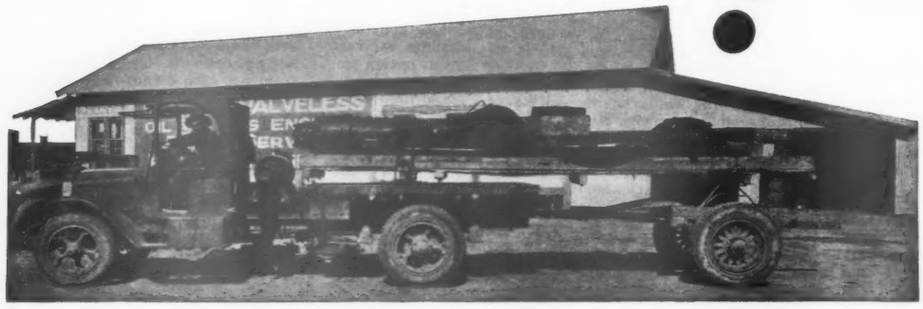
During the past year or two much scientific work has been done on well spacing which will probably result in the adoption of well spacing methods to meet more nearly the requirements of the individual fields. This is both an economic and engineering problem in which there is room for advancement.

PRODUCTION DROPS SUDDENLY

Can you explain why a group of leases that have been producing steadily for 17 years should suffer a sharp decline in production during the past 22 weeks? The average production per well per day has dropped during the last 22 weeks from 1.2 bbls. to 0.9 bbls. Production on neighboring leases has suffered the same sharp drop for no apparent reason. Can you explain it?—O. P. N.

To answer this question it would be necessary to make a detailed study of the leases involved, giving particular attention to their production history, production practice, changes in production on the particular leases involved or on neighboring leases, and subsurface conditions with special attention to water encroachment, gas pressure, underground condition of wells, condition of pumping equipment and many other things. You will see that it is impossible to answer your question without conducting a detailed investigation covering both the field and the office records.

All Aboard!



The Entire Franklin Engine is Easily Moved on one Truck Load—

One truck—that's all. And no overloading or straining of the truck.

The Franklin Engines are not bulky. Good material and scientific design give the Franklin Engine greater strength without useless weightiness.

And loading the Franklin is as quick and efficient as a military movement. The few parts necessary to remove for loading, come off easily, and are quickly assembled after unloading.

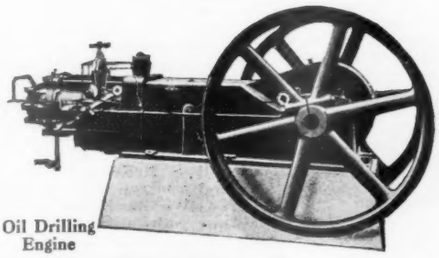
Yet, the best part of the Franklin is that you've got something when you get it set up. The simplicity of the mechanism, and the small quantity of fuel and water needed, join to make the Franklin Engines the best buy for power.

FRANKLIN VALVELESS ENGINE COMPANY
Franklin, Pa.

OIL WELL SU
Branche

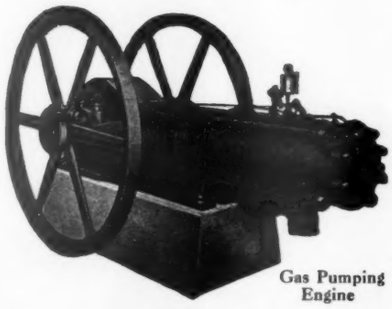
OIL AND GAS ENGINES

The FRANKLIN Engines



Oil Drilling Engine

New type of oil drilling engine for western and mid-continent service. An engine combining ample power, simplicity, quick starting, low fuel and lubricating cost.

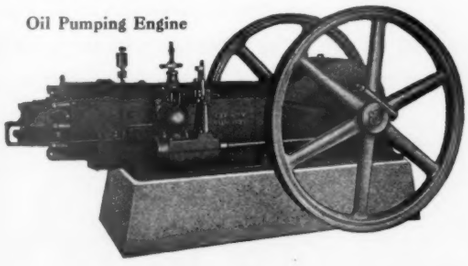


Gas Pumping Engine

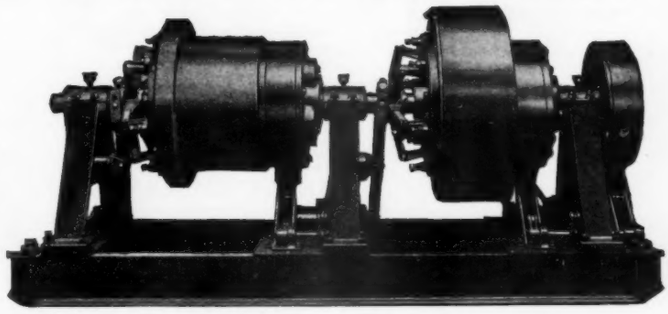
Franklin gas pumping engines are light, economical and powerful. They are interchangeable on the same block as gas drilling engines.

After you have finished drilling, move in one of these Franklin Pumping Engines. These pumpers come in 30, 40, 50 and 75 horsepower.

Oil Pumping Engine

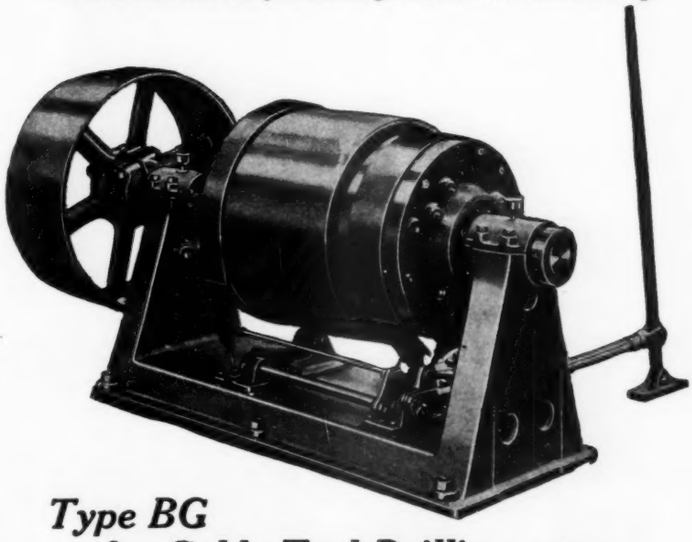


Many Features Put FRANKLIN'S NEW LINE far Ahead of Old Style Clutches



Features of the 2 SD Drilling Clutch

Two speeds in either forward or reverse—all bearings enclosed—run in oil or grease.
All brake band and clutch discs adjusted without stopping the engine.
All brackets, bell cranks, toggle arms, brake cranks, levers, driving discs, spiders and sliding sleeves made of steel.
All similar parts of clutch interchangeable.
Belt driven—no shaft breakage.
The 2 SD Clutch will pull the largest bailer without faltering.



Type BG for Cable Tool Drilling, etc.

Here is a clutch that will operate satisfactorily and smoothly for cable tool drilling or for pumping operation. The BG Type has one speed forward and reverse. It is much the same construction as the 2 SD clutch.

FRANKLIN VALVELESS ENGINE COMPANY
Franklin, Pa.

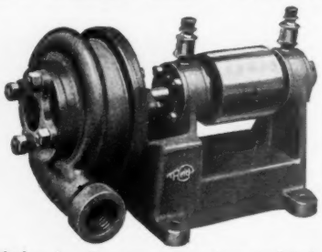
PLY COMPANY
Oil Fields

EQUIPMENT AND SUPPLIES

DESIGN OF JP-2 PUMP HAS ADDED FEATURES

The JP-2 pump, made by the Joseph Reid Gas Engine Co., Oil City, Pa., is a centrifugal pump designed for use in circulating water through the water jacket of the engine cylinder. The pump, while it is similar in design to the JP-1 pump and handles approximately the same amount of water, has several advantages better fitting it for extended operation.

Two Timken roller bearings keep the pump shaft rigid in perfect alignment and provide smooth operation. Among other advantages gained by the use of



Timken bearings are the savings in lubricating costs and maintenance. Another feature is the solid construction of the pump base which has the two shaft bearing housings cast integral. This construction assures a rigid support for the pump shaft and bearings.

The case is made of high grade cast iron, uniform in thickness to prevent shrinkage strains and strong enough to withstand the maximum pressure against which these pumps are designed to operate.

The pump shaft is made of high carbon steel, accurately machined and large enough to transmit all the power needed for operation. The impeller is cast iron and securely fastened to the shaft.

BUSINESS NOTES

The Griscom-Russell Co.'s office in Boston is now in the Chamber of Commerce Building. The company manufacturers evaporators for purifying raw boiler-feed water, preheating devices and a cooler for maintaining constant temperatures of lubricating oil, etc.

A motion picture portraying the advantages of arc welding and the wide possibilities of its application has been released by the Lincoln Electric Co., Cleveland, Ohio. The film is provided gratis.

STEEL BUILDINGS KEPT AT EVEN TEMPERATURES

Advantages of standardized steel buildings have caused their wide use throughout the oil industry. Two objections, depreciation owing to rust and corrosion, and difficulty of heating in winter and keeping comfortable in warm weather, have been reduced in the standard steel buildings manufactured by the International Derrick & Equipment Co.

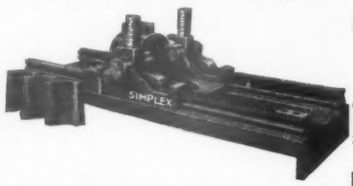
Ideco standardized steel buildings are furnished with hot dip galvanized steel frames, sash and sheeting. There are no exposed surfaces for rust and corrosion.

The insulating problem also has been

met. By patented method of applying the insulating material to the wall panels and roof or ceiling line, the company has produced a portable, comfortable, standardized steel building that is cooler in summer, warmer in winter, less costly to heat, more quiet, and of greater strength. The buildings are said to be suited for offices, storehouses and all other types of buildings in which it is desired to maintain an even temperature.

SIMPLEX JACK REMOVES PIPE-LAYING TROUBLES

Difficulties met in laying pipe for water, gas, electrical service or oil-heating supply under paved streets or alleys or under gardens or lawns are solved by the Simplex pipe-pushing jacks manufac-



tured by Templeton, Kenly & Co., Ltd., Chicago. The pipe is gripped by jaws in the center of the jack shown in the accompanying illustration, and one or two men operating each of the two levers cause the pipe to be pushed through the ground powerfully and accurately.

Simplex jacks are built in two sizes, No. 332 for pushing pipe three-fourths inch to 2 inches in diameter, and No. 334 for pipe 2 to 4 inches in diameter. Each size of pipe requires a set of jaws to conform to the size of pipe, crushing or distorting of the pipe being avoided.

The average time required to push a 3-inch pipe through 25 inches of solid soil is between five and six minutes, using two men on each of the two levers, or approximately 23 man minutes. This time includes resetting the pushing or traveling portion of the jack.

INGERSOLL-RAND CO. HAS NEW COMPRESSOR

Ingersoll-Rand Co., New York, announces a new direct-connected, gas engine driven compressor, designated Type XG, and introduced following several years of development under actual operating conditions. It consists of a 2-cylinder, 4-cycle gas engine, direct-connected to Ingersoll-Rand compressing cylinders with I-R plate-type valves.

Features of the XG are its rugged construction, accessibility of frames and running gea, and economy of floor space and foundation requirements. The compression end can be furnished to accommodate usual conditions of pressure range. The compressor is designed for continuous service in the oil and gas industries, or to general industrial use.

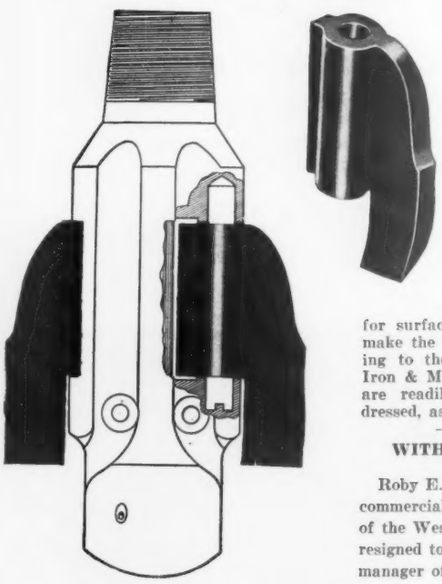
R. S. McKEEVER WITH BRIDGEPORT COMPANY

R. S. McKeever is now assistant general manager of the Bridgeport Machine Co., Wichita, Kans., having assumed the new position January 1. Mr. McKeever

R. S. McKeever

formerly was sales manager for the Oklahoma Iron Works, Tulsa, and before that was in charge of sales for the International Supply Co., Tulsa. He had been with the Oklahoma Iron Works since 1909 continuously except for three years with the Oil Well Supply Co.

SURFACE BIT BLADES MAKE HOLE OF VARYING SIZE



The American surface bit blades for rock bits are being used with reported success in drilling operations in the Maud, Seminole and Mission Fields, and they were used in drilling the surface hole of the Indian Territory Illuminating Oil Co.'s well near Oklahoma City, which has been receiving much attention. The blades, which enable the driller to make hole of varying diameter, are used by removing the side reamers and replacing with the bit blades for surface hole. The cones on the bit make the pilot hole. The blades, according to the manufacturer, the American Iron & Machine Works, Oklahoma City, are readily removed and built up or dressed, as ordinary fishtail bits are.

WITH RADIATOR COMPANY

Roby E. Proctor, for the past six years commercial manager of the Tulsa office of the Western Union Telegraph Co., has resigned to accept the position of general manager of the Craig Radiator Co.

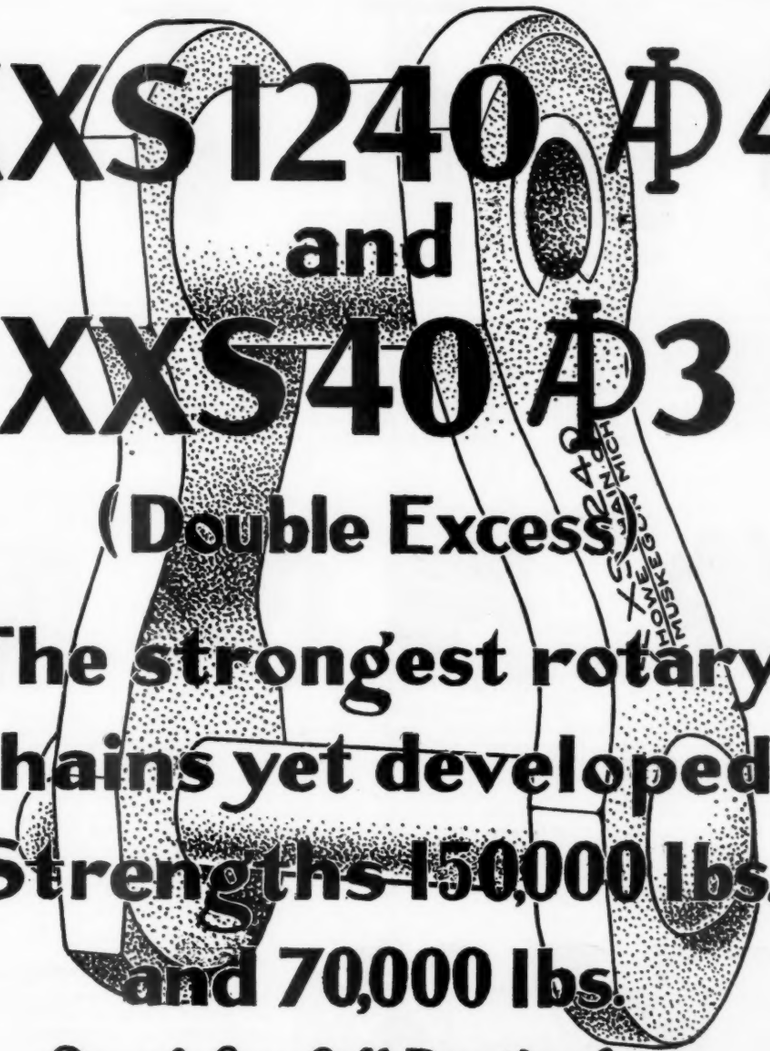
YALE & TOWNE OPEN NEW TOWNE SERVICE BUILDING

Funds for the erection and care of the Towne Service Building of the Yale & Towne Manufacturing Co., Stamford, Conn., recently dedicated, were provided through a special bequest in the will of the late chairman of the board, Henry R. Towne. The structure is to serve as a recreational center for the thousands of employes.

The Georgian exterior is of colonial brick, trimmed with Indiana limestone, and the lobby is of marble. There are two stories and basement. The main floor houses the works hospital, dental clinic, and Industrial Relations Bureau. The second floor has an auditorium, gallery and stage, with a seating capacity of 400, and a library. In the basement are bowling alleys and pool tables. A motion picture outfit will be installed.

HOWE CHAIN

XXS1240 Φ4
and
XXS40 Φ3
(Double Excess)



The strongest rotary chains yet developed. Strengths 150,000 lbs. and 70,000 lbs.

Send for full Particulars

HOWE CHAIN COMPANY, MUSKEGON, MICH.
CHAIN SPECIALISTS

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Republic Supply Company
GENERAL OFFICES - HOUSTON, TEXAS
OIL AND GAS WELL SUPPLIES
ROTARY AND CABLE TOOLS

Crane equipment for oil and gas pipe lines

No. 760-D

One of a group of cast steel screwed fittings with long thread lengths. Tested at 800 pounds hydraulic pressure. This pattern is made for casting in steel and should not be compared with cast steel fittings made from ordinary cast iron patterns. See Catalogue 51, page 407.

No. 260-D

One of a group of cast steel fittings for oil vapor pressures up to 550 pounds, temperatures to 900°F., and cold oil, gas and water working pressures up to 2000 pounds. See Catalogue 51, page 407.

No. 754

Double disc gate valve, 700 pounds test. Discs are guided accurately in the body. Ferrosteel body and bonnet. Stems are of Crane stem metal, high grade manganese bronze of over 50,000 pounds tensile strength. Body rings are of Crane Steam Brass. See Circular 212.

No. 343-E

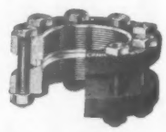
Double disc gate valve, ferrosteel 1000 pounds test. Discs are accurately guided in the body. Inside wedging mechanism is brass to iron. Accurate machining reduces friction in all sliding parts. Supplied with screwed or flanged ends, in outside screw and yoke or non-rising stem patterns. See Circular 212.

No. 215-H

Double disc gate valve, 1600 pound test, for oil, gas or water Ferrosteel body, bonnet and discs. Discs are guided accurately in the body. Screwed end valves are lipped for lead. Outside screw and yoke or non-rising stem patterns can be supplied. See page 14, Circular 212.

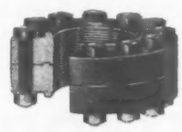
No. 266-E

Heavy pattern malleable iron cross fitting, made in ¼-inch to 16-inch sizes. Particularly adapted for exacting requirements of the oil industry. Long thread lengths and heavier bands than commercial fittings. For use on high pressure cold oil, gas and waterlines. See Catalogue 51, page 339.



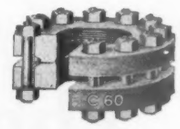
No. 245-H

Heavy pattern malleable iron flange union for oil working pressures up to 800 pounds. For use on high pressure cold oil, gas and water lines. Ground-joint seat and exceptionally long threads. See Catalogue 51, page 339.



No. 247-H

Ferrosteel hydraulic flange union; tongue and groove. Good for cold oil, gas or water pressures up to 1000 pounds. Suitable sizes for all oil, gas and water purposes. Gasket is extra with this type. See Catalogue 51, page 340.



No. 831-E

All steel ground joint flange union for hot oil working pressures up to 600 pounds and temperatures to 750°F.; 400 pounds at 900°; cold water, oil or gas working pressure to 1200 pounds. Available in sizes from 4-inch to 12-inch inclusive. See Circular 212.

Cast steel distributing header

Manifold headers will be made to your order with any number of outlets, according to your special requirements. The fitting illustrated here is supplied in cast steel, ferrosteel, or cast iron, with either flanged or screwed ends. Write for details.

Learn more about these materials backed by 74 YEARS OF EXPERIENCE. Write for the Crane book on materials for field, pipe line, natural gas, and gasoline plants, Circular 212

CRANE

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Branches and Sales Offices in One Hundred and Eighty Cities

MAGNETOMETER STUDY OF STATE OF TEXAS

(Continued from Page 34)

through Palestine, Anderson County, to Athens, Henderson County. Plate 2 shows the same disturbance following streams flowing to the Neches River on the east and to the Trinity River on the west.

One important fact in connection with this particular magnetic disturbance is the finding of gas along this axis in the vicinity from Madisonville to Crockett.

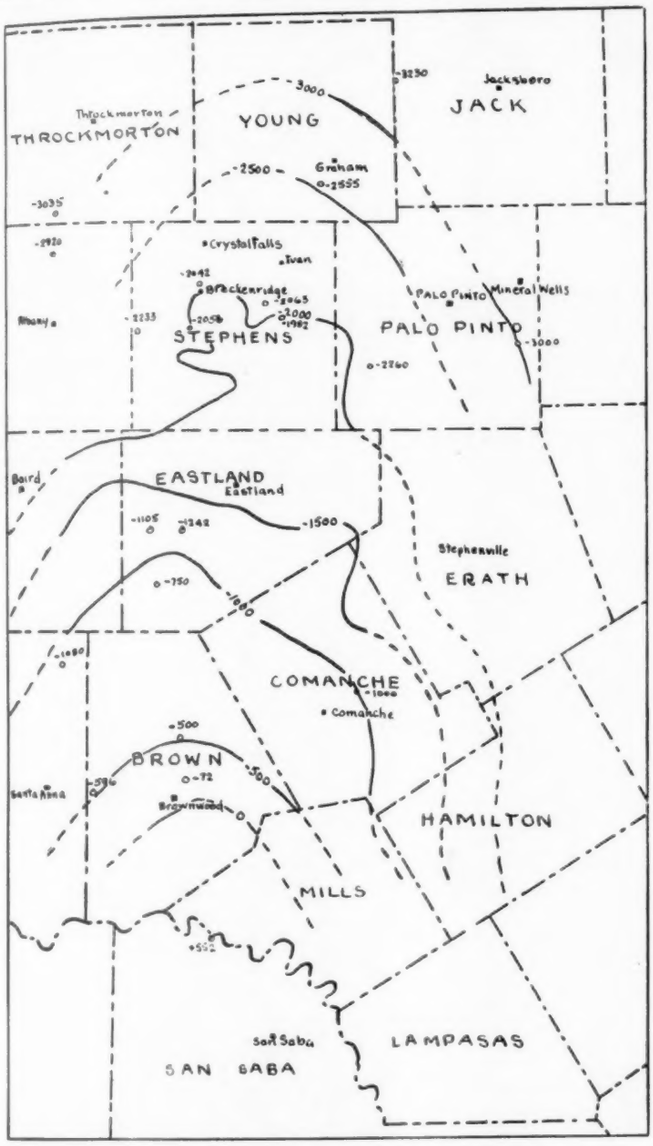
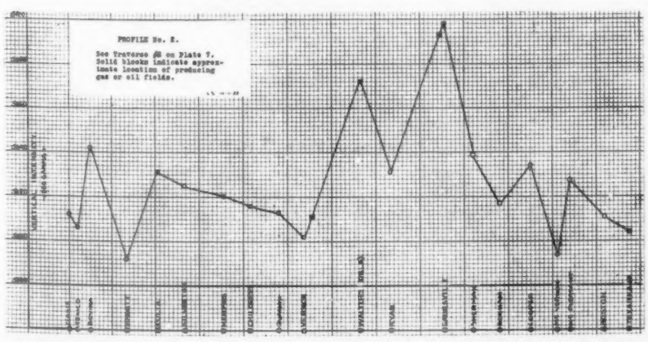


Plate 5—Generalized structure map showing dip of Bend group. Contours drawn on top of Marble Falls limestone. Datum sea level. Traced from U. of T. Bulletin 2132.

along the eastern axis of the same magnetic high associated with the Mexia fault.

Although there may be no significance

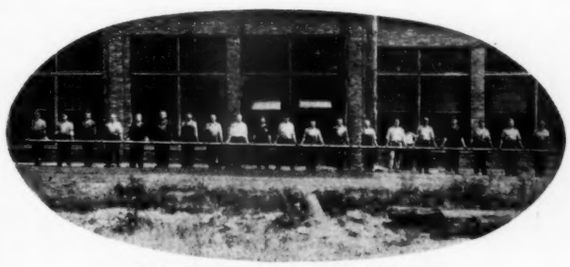


attached to watersheds, attention is called to the fact that the axis just pointed out appears also to be on the watershed for

Balcones Fault

Bulletin 1932, University of Texas:

"In central and southern Texas the line dividing the great plains and the Gulf coastal plain is a pronounced southeast to south facing escarpment produced by faults and dips, and known as the



A single unwelded length of Babcock & Wilcox Seamless Steel Pipe.

Long Lengths *of* Seamless Steel Pipe *for the Oil Country*

BESIDES the greater strength, uniformity, workability and other desirable characteristics of Seamless Steel, Babcock and Wilcox Seamless Steel Pipe can be obtained in lengths longer than those in which welded steel pipe is ordinarily produced.

There are obvious advantages, both in first cost and in maintenance charges, in using long lengths for pipe lines, water lines and wherever else practicable. The Babcock & Wilcox booklet "Seamless Steel Pipe" gives complete information. Send for a copy.

For the Refiner	*For the Producer*
Refinery Piping	Oil Well Tubing
1 in. to 5 in. I.P.S.	*2 in., 2½ in., 3 in.*
Still Tubes	External Upset Tubing
upset or plain	*2 in., 2½ in., 3 in.*
Tank Car Piping	Line Pipe
Tubular Structural	*up to 5 in. I.P.S.*
Material	Bailer Tubing
Boiler Tubes	Boiler Tubes
Special Tubing	Special Tubing

THE BABCOCK & WILCOX TUBE CO.

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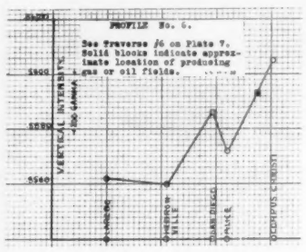
SEAMLESS STEEL TUBES PIPE

Balcones escarpment. This escarpment, coming into the State near Del Rio on the Rio Grande, continues east to Medina County and there turns to the northeast passing through Bexar County in a direction approximating 60 degrees east of north.

"This escarpment indicates the location of the first large faults and dips of the Balcones fault zone."

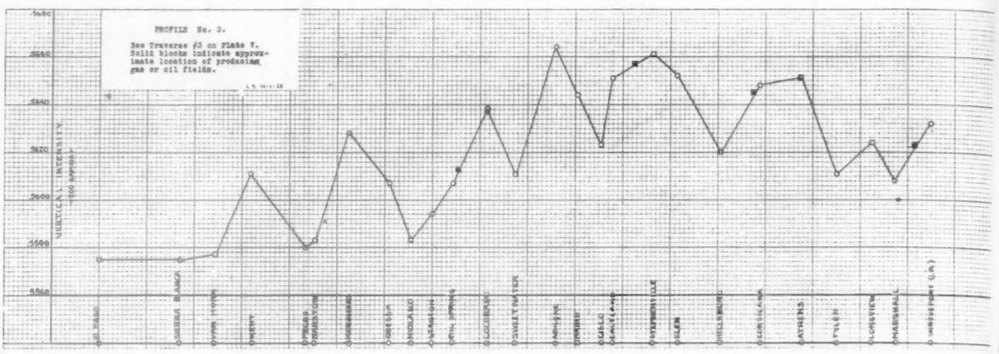
Plate 4 shows in heavy broken line the



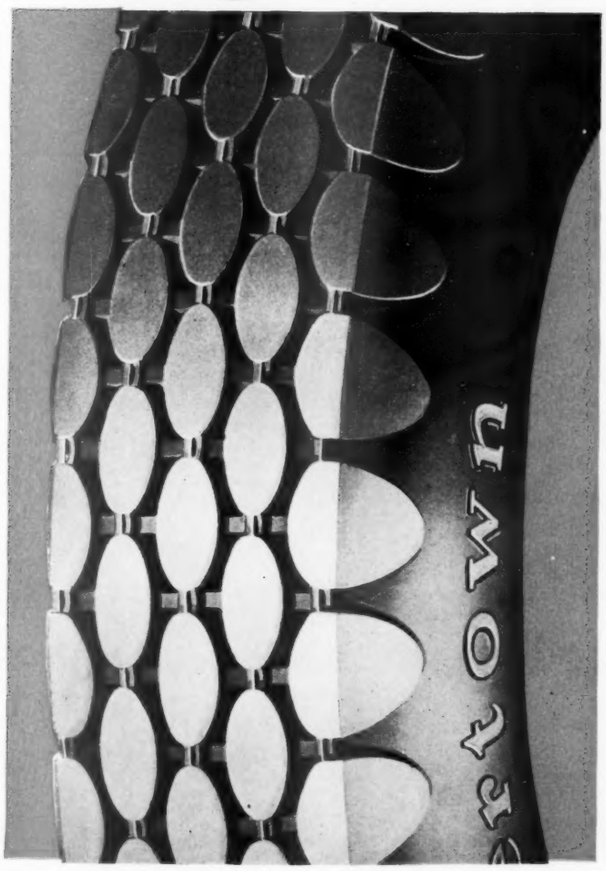
approximate trace of the axis of the Balcones fault. Plate 4-A shows the trace of the downthrow side of this same fault.

Examination of Plate 1 indicates some unusual disturbance along a line passing south of Bracketville, thence east in the vicinity of Uvalde City. At this point the lack of controlling stations prevents definite determination of the axis of disturbance but it is again noticeable at San Antonio, New Braunfels, San Marcos, Austin and Georgetown.

For basis of comparison this line of magnetic disturbance has been traced on Plate 4 and is shown by a series of xx marks. Comparing this latter trace with Plate 4-A it would seem that the magnetic disturbance is indicative of the downthrown side of the fault.


PROFILE No. 3.
See Traverse #3 on Plate 7.
Solid blocks indicate approximate location of producing gas or oil fields.
VERTICAL INTENSITY
5680
5640
5600
5560
5520
U. S. 10-11-28
DEL RIO
CIUDAD BANCO
COMSTOCK
SPOFFORD
PRESIDIO WELLS
MARFA DIST.
MARFA
OCOTILLO CREEK
ALPINE
MARATHON
ALSOMITO
LAKE
LANGTRY
SANDERSON
DRYDEN
COMSTOCK
DEVILS RIVER
DEL RIO
BRACKETTVILLE

Now you can be sure *of* TIRE MILEAGE



from the tires that you buy

NO MATTER what industry you are engaged in . . . no matter what section or sections of the country your trucks or buses must operate in . . . no matter over what kind of roads they must travel . . . Goodrich truck and bus tires will answer your tire operating problems *better* than any other tires that you can buy. The past experience of thousands of fleet operators in all industries definitely prove it.

Specify Goodrich when you purchase your next truck. Then you will get the *right* tire for the load and the road.

THE B. F. GOODRICH RUBBER COMPANY · Akron, Ohio · *Established 1870*

Pacific Goodrich Co., Los Angeles, Cal. In Canada: Canadian Goodrich Co., Kitchener, Ont.

FOR TRUCKS

"We have just removed from one of our trucks one 32 x 6 Goodrich Heavy Duty Silvertown Casing that has gone 49,102 miles. As this truck is used in very hard service we think that this is exceptionally good service."

WILFONG CARTAGE COMPANY
Contractors, Youngstown, Ohio

BUSES

"We had 33 x 675 Goodrich Silvertowns on one of our Nash buses on our line weighing 5800 pounds. To date these tires have covered 51,262 miles during a period of eight months."

NASH BUS LINES
Bus Transportation, Wilson, N. C.

AND TRAILERS

"We have two new Semi-Trailer Reo Trucks on 34 x 7 Goodrich Heavy Duty Silvertown on both trucks and trailers, hauling 4000 feet of green lumber to the load. These tires have rolled over 21,000 miles under these heavy loads with very little interruption from tire trouble."

BEARDMORE TRANSFER LINE
Warehousing and Distributing, Spokane, Wash.

HEAVY DUTY

Goodrich Silvertowns

FROM INDUSTRIES ALL OVER THE UNITED STATES COME STATEMENTS LIKE THESE ABOUT GOODRICH HEAVY DUTY SILVERTOWNS

"The Bull-Dog Mack on the 40 x 8 Goodrich Heavy Duty Silvertowns has passed the 40,000 mile mark before the first tire was taken out of service and the treads are still good for many thousand miles more."

S. & S. Auto Freight
Redmond, Washington.

"It gives me a great deal of pleasure at this time to inform you of the remarkable service we have had with a set of your 36 x 6 truck tires. These tires have been in daily service on one of our 1000 gallon tank trucks for three years."

K. B. K. Service Stations, *Inc.*
Glendale, California.

"We have been using Goodrich Silvertown Heavy Dutys on our school buses for the past two years. Our cost per bus mile was among the lowest of the state last year—and we feel that a great part of this was due to the excellent trouble-free mileage delivered by your Heavy Duty Tires."

Wilson County Garage
Wilson, N. C.

"The hundreds of thousands of miles on Goodrich Heavy Duty Silvertown tires, have proven to me the value of uninterrupted service."

M. Sinclair, *Trucking Contractor,*
Spokane, Washington.

"I am operating a freight line over both pavement and gravel roads. I now have in service 36 x 8 and 40 x 8 Heavy Duty Silvertowns which have an average mileage to date of approximately 45,000 miles. These tires are still in constant service hauling heavy freight loads. Four tires on the first truck equipped with pneumatics have gone over 60,000 miles and are still in service at this time on a four wheel trailer."

Red Ball Motor Freight
Chehalis, Washington

Now *you* can be sure of tire mileage. Be *sure* to specify Goodrich Silvertowns when you buy your next truck.

THE B. F. GOODRICH RUBBER COMPANY · Akron, Ohio · *Est. 1870*

Pacific Goodrich Rubber Co., Los Angeles, Cal. In Canada: Canadian Goodrich Co., Kitchener, Ont.

HEAVY DUTY

Goodrich Silvertowns

LAWS TO AID INDUSTRY TO GOVERN ITSELF

(Continued from Page 30)

only the affair of the industry but of the public as well.

The Problem That Must Be Met

The competitive drilling of the oil and gas pools of the country not only prevents the petroleum industry from overcoming the vice of overproduction in relation to an irreplaceable and indispensable natural resource, the extent of which is unknown, but it produces other economic evils. For one thing, and in an important degree, it increases development costs which must be passed on to the consumer in the guise of price, or such costs must be absorbed by the industry. The latter alternative which is more likely to prevail is one of the causes of meager or no profits in the business. But rising far above the consideration just stated, from the standpoint of conservancy, is the fact that the intense competitive drilling of a pool results either in the dissipation or the inefficient use of the gas energy which is the chief agency in producing oil. This means that oil is left in the ground that should be recovered. Again as a necessary incident of competitive drilling, far more oil is held in expensive steel storage attended by carrying charges in the form of taxes, insurance and interest on investment which mount to large sums that must be passed on to the consumer or absorbed by the industry, than is currently required by the refineries of the country. From every conceivable point of view, this excess of petroleum in steel storage should be confined to its natural habitat underground. To this point we are but restating observations that have been put forth by every authority that has had occasion to speak upon the subject, the Federal Oil Conservation Board, the Federal Oil Committee of Nine, the American Petroleum Institute and the leaders of the petroleum industry generally. The difficulty does not lie in any failure to perceive that competitive drilling is the evil to be remedied, but in finding and applying the practical and efficient remedy or remedies.

The Basic Remedy

No one who studiously has investigated these questions will dispute two propositions: First, that the most practical and efficient method of meeting the uneconomic competitive drilling of an oil and gas pool is voluntary action on the part of the operators interested therein to merge all of their holdings in such manner that the pool can be developed and operated as a single property. This is the so-called principle of unit development and operation. Secondly, if this device cannot be brought into general acceptance, the alternative should be an agreement among the operators in the same oil and gas pool for the development and operation of their respective separate holdings in accordance with the same methods that automatically would be applied if all the properties were merged for the purpose of unit development and operation. Stress is laid upon the voluntary unit plan, because under that condition conservation in its true sense proceeds from the self-interest of the operators concerned. These would be the natural results attending th merging of all properties in the same oil and gas pool for unit development: First, such wells only would be drilled as would be consistent with a fair profit, and, at the same time, recover as much of the oil content of the pool as possible. Second. Assuming the participation of the royalty owners in the agreement, the necessity of line drilling would be obviated. Third. Drilling and producing activities could be accelerated or retarded, depending upon the current market demand, a privilege which is now enjoyed by every industry save the petroleum industry. Fourth. A method common to the entire pool for the conservation of the original gas energy, the chief propulsive force in the production of oil, in the opinion of petroleum engineers, could be adopted, and this would result in two things important to the cause of conservation—the orderly production of oil from the pool, and a larger ultimate oil recovery. Fifth. A method common to the pool for the injection of gas, air, or other substances or vapor into the producing formation, or formations to restore pressure for the two purposes just indicated, when this course should be justified by the producing condition of the pool.

Progress Not Sufficient

Recognizing the soundness of the principle of voluntary unit development and operation, the petroleum industry is making some progress in its application, but not to an extent that is especially reassuring. Three practical obstacles are present: To begin with, the principle is hardly adapted to a pool that has been brought into production, even by the discovery of one paying well. The reason for this objection is that a discovery establishes conflicting opinions among the operators interested in the pool regarding the relative value of their respective holdings. The tendency of this condition is to prevent a general agreement for the merging of the entire acreage in the pool. Second. Even where there has been no discovery, an operator or several operators in the pool may conceive that their properties are so located on the structure that they possess a greater relative value for the purposes of unit development and operation than their associates in the pool are willing to agree to. Hence the project fails. Third. The obstacle of the royalty owners. Few, if any, existing oil and gas leases provide for the merging of the royalty interest in a plan for unit development and operation. While occasionally unit development is brought about without the express merging of the royalty interests, the arrangement presents both practical and legal difficulties. To gain the consent of all the royalty owners to a project of this sort is an added impediment.

Agreement on Methods

The second proposal to meet the problem of competitive drilling of an oil and gas pool through voluntary action on the part of the petroleum industry, is an agreement among the operators interested in the pool to develop and operate each separate holding therein in accordance with certain prescribed methods and practices. In the main, these would accord with the methods that automatically would be resorted to should the properties be merged for unit development. The clear advantage of this expedient over the other voluntary project would be that the relative value of the properties involved, whether real or imaginary, would be preserved. If one lease by reason of its favorable location on the structure were capable of producing more oil than another, or all of the other leases in the pool, the owner thereof under this scheme would have the full benefit of his good fortune. Again, the royalty problem incident to an agreement for co-operative development and operation of an oil pool as distinguished from an agreement for unit development would be somewhat simplified. Your committee does not feel that it is within its responsibilities to express a definite conclusion upon the relative merits of a voluntary agreement for the unit development and operation of an oil and gas pool by the operators interested therein and a voluntary agreement among them for the co-operative development and operation of such pool. If opinion in the industry is to so develop that a choice between the two methods or the adoption of one or the other, depending upon the circumstances of the particular pool, is to be accepted as the sole remedy for competitive drilling, the later section of this report dealing with the question of compulsory co-operative development and operation of new oil pools, passes out of view.

Voluntary Agreements for the Unit or Co-operative Development and Operation of Oil and Gas Pools

If agreements of the above character are to be the sole, or at any rate, two of the remedies for competitive drilling, the effect of the antitrust laws of the Federal and State Governments, in respect of such agreements, merit attention. Viewed in their fundamental aspect, an agreement for unit development or an agreement for co-operative development results in a restraint upon production. The Federal Oil Conservation Board, in its original report, after recommending the two practices just outlined, adverted to the fact that the federal and state antitrust laws were either a real or a pretended obstacle to the making of agreements of this character. Such was the conclusion of the Committee of Nine, appointed by the Federal Oil Conservation Board. The committee last named has formulated a bill for passage by Congress which will meet the federal question. At the time this report is made, no agency so far as your committee is concerned has undertaken the task of formulating state legislation to meet the views of the Federal Oil Conservation Board. In this part of our report, your committee proceeds upon three assumptions: First. That agreements among oil operators in the same oil and gas pool, either for the unit development and operation of such pool, or for the co-operative development and operation of the same, will either solve, or aid in solving, the question of the competitive drilling of oil and gas pools. Second. That in the public interest as well as in the interest of the petroleum industry, that industry should have the same economic advantage that is accorded to all other industrial and producing enterprises, namely, the privilege of stopping or limiting production during periods of overproduction. Third. That whether the petroleum industry is legally justified in its position, that relief from the state antitrust laws is necessary to protect it in the three types of agreement above indicated, or not, the fact still remains that the cause of petroleum conservation has its practical as well as its legal aspects. In this view, your committee concludes that if the antitrust laws of the oil-producing states are obstacles to the things which the petroleum industry is seeking to accomplish as aids to conservation, those obstacles should be removed, regardless of technical considerations. It is for these reasons that your committee submits herewith a form of enactment to meet the attitude of the petroleum industry in respect of the antitrust laws of the oil-producing states.

Analysis of the Act Referred to Above

Your committee is agreed that as a legal proposition, agreements among oil and gas operators in the same pool for the unit or co-operative development of such pool would not be within the condemnation of the antitrust laws of the important oil-producing states, excepting perhaps the States of California and Texas, in respect of which your committee expresses no opinion. Your committee further believes that it is at least doubtful that an agreement among the operators of the same pool to restrict drilling or limit production from such pool during periods of actual overproduction therein would be within the purview of the antitrust laws of the oil-producing states save again the States of California and Texas upon which your committee is not informed. Agreements among operators of the same pool to restrict drilling or curtail production during periods of threatened overproduction in the pool present a question more open to debate and yet your committee viewing the matter more in its practical than in its legal significance is submitting a form of bill permitting agreements among operators in the same pool during periods of threatened overproduction. Your committee would have gone further upon this subject of overproduction were it not for the decision of the Supreme Court of the United States in Connelly vs. Union Sewer Pipe Co., 184 U. S. 540. We were of opinion that during periods of statewide overproduction the oil operators of the entire state should have the right to restrict drilling and to curtail production to equalize supply and demand. It is our conclusion that conservation in its application to petroleum justifies this course, but in the case alluded to it was held that the exemption of two industries from the antitrust laws of the State of Illinois violated the equal protection clause of the Fourteenth Amendment. The question of exceptions to this rule on the basis of classification was discussed in the case and the doctrine thereof, especially in respect of legislative classification, has been substantially modified by the later decisions of the Supreme Court of the United States. Your committee even doubts the reaffirmance of the rule laid down in the Connelly case if the question again were to come before the Supreme Court of the United States. Nevertheless, your committee hesitates to recommend a state enactment which would exempt statewide agreements to restrict drilling and limit production or both during a statewide period of overproduction. On the other question of agreements to restrict drilling and curtail production in respect of single pools, there is no division of opinion on the part of your committee. The nature of an oil and gas pool and the correlative rights and obligations of the operators therein supplemented by the irreplaceable character of these minerals, and their importance to the public, would in our judgment uphold the measure we propose as a proper classification within the principle of the equal protection clause of the Fourteenth Amendment as interpreted by the Supreme Court of the United States. With these considerations in mind, your committee proceeds to analyze the antitrust act submitted herewith.

(a)

The Title.—The local oil organizations in respect of each state to which the work of this committee is to be referred should scrutinize the title to the act submitted herewith. Your committee was of the opinion that conservation rather than relief from the state antitrust laws should be emphasized. This leaves open the constitutional question as to whether the purposes of the act are clearly expressed in the title. In a matter so important as an exemption from the general public policy of the state, the ob-

C. C. BROWN RESIGNS FROM MARLAND COMPANY

C. C. Brown, executive vice president and general manager of the Marland Production Co., has resigned effective December 31. Mr. Brown's resignation as an official of the Marland Production Co. was announced this week, and it was stated that he would continue as a vice president and director of the Marland Oil Co., the parent organization.

While no official announcement was made, it was considered probable that E. J. Nicklos, former division manager of The Texas Company in Oklahoma, Kansas and Kentucky, would succeed Mr. Brown and would be the executive in charge of all drilling and oil production. Mr. Nicklos is expected to leave Tulsa for Ponca City, January 4.

C. C. Brown

K. C. Sclater, chief petroleum engineer of the Marland Production Co., has also resigned to enter private practice.

servations here made may assume pronounced importance.

(b)

Definitions.—The question that arises here is that of certainty. The act proposed contemplates exceptions from criminal statutes. This being true, the matter of statutory certainty rises to high importance. The sufficiency of the definitions upon which the operative portion of the enactment are predicated, should be closely scrutinized by the local oil organizations which may assume to sponsor the enactment.

(c)

Operative Sections.—Sections 2 and 3 are designed to sanction agreements among oil operators in the same pool for unit or co-operative development, or to restrict drilling and limit production, or both, during periods of overproduction, or threatened overproduction in the pool. As the antitrust laws of the oil-producing states differ in their terms and interpretations, the local organizations should make sure that the provisions proposed meet their need in this respect.

(d)

Emergency Clause.—Your committee made no effort to determine either the time or the conditions under which the proposed act should become effective. The clause necessary to accomplish this purpose must be supplied locally.

Compulsory Unit and Co-Operative Development

To this stage our report deals with voluntary agreements among oil and gas operators in the same oil and gas pool for unit or co-operative development or to restrict drilling and limit production during periods of overproduction or threatened overproduction in the pool. The all-important question in the American petroleum industry today and in the minds of the Federal Oil Conservation Board as well, is whether or not the petroleum industry through voluntary action can meet the problem of competitive drilling and therefore in its ultimate effect the problem of conservation. Opinion in the industry itself diverges. Forward-looking leaders are now reconciled to the necessity of some modified form of compulsion to prevent competitive drilling. But intense individualists in the business reject the idea vehemently. From the evidence assembled your committee is of opinion that voluntary action on the part of the industry will not in the near future, and perhaps never, meet the problem considered by this report. The reason for this conclusion is not far to seek. The answer lies in the never-changing dictates of human nature. A refiner holding a single lease in an important and prolific oil pool, needing the crude for his business, will drill without restraint and produce to capacity regardless of the fact that his operations necessitate the same intensive drilling and producing campaign on the part of every other operator in the pool. Again, a producer owning one lease in a pool driven by financial necessity or animated by the natural desire to "make hay while the sun shines" will act likewise regardless of the consideration that his operations will be followed by a similar intensive and speedy work by his competitors in the pool. From the narrow point of view, these practices cannot be condemned. On the other hand, with the problem of national conservation at stake and taking into account also the correlative rights and obligations of the operators in the same pool, your committee cannot believe that this condition should be permitted to continue. The all-important question is this: In every pursuit save the petroleum industry a producer may either cease to produce entirely or limit his production to meet the market demand. Your committee is of opinion that one operator in an oil pool has the same constitutional right to refrain or limit his production as has another operator therein the right to drill without restriction and to produce to capacity. This conflict in purpose and interest coupled with the community nature of an oil and gas pool irresistibly suggests the solution of this important problem in the minds of your committee. The State under the police power may adjust and regulate these conflicting rights in a community property. No operator may be prevented from drilling and producing entirely and no operator may be permitted to drill without restraint and to produce to capacity. The law may step in and reconcile the position of both. It is for the practical reasons here stated, and upon the basis of the legal theory here presented that your committee presumes to offer a type of legislation for the compulsory co-operative development and operation of an oil and gas pool.

Compulsory Unit Development

Your committee perceives no constitutional basis for compelling oil operators in the same pool to so merge their separate holdings that they may be operated as a unit. This in the judgment of your committee would constitute a taking and not a regulation of property. Therefore, if the police power of the oil-producing states is to be invoked it must be in relation to a plan for the compulsory co-operative development and operation of oil pools. Such, at least, is the view of your committee.

The Concept of Compulsory Co-Operative Development in General

Your committee submits its bill relating to this subject with the following considerations in mind: First. The preamble to the bill indicates that it is the purpose of the legislature to ground the exercise of police power in this connection upon two propositions. Primarily, upon the correlative situation of the oil operators and royalty owners in the same oil and gas pool. Since the statute proposed is designed to adjust and regulate the correlative position of the parties in interest, we are clearly of opinion that the exercise of the police power of the State in this regard is sustainable. The second constitutional basis for the proposed statute is that the legislation involves the public interest in conserving an irreplaceable and indispensable natural resource. Here, we recognize that we may be on debatable ground. Nevertheless, we believe that the tendency of the decisions would support the statute on this foundation also. The second important consideration which your committee continually respected presents a practical and not a legal phase. The business of producing oil is not only highly technical, but it is perhaps the most individualistic pursuit known to modern industry. Naturally, an oil operator in the development and operation of his property makes full use of his skill and experience in the undertaking, but other factors sometimes equally controlling, and at least always present, accentuate the individualistic aspect of the business. The financial daring, or the reverse, his idiosyncrasies and, in the vernacular of the day, his hunches, enter into his exploring and producing activities. When all of these elements are combined, the conclusion irresistibly follows that this enterprise could not, and should not, submit to any far-reaching scheme of governmental interference or regulation. This conclusion is just as much in the public interest as it is in the interest of the petroleum industry. Your committee in its proposal took these all-important considerations into account. The act submitted reserves to the industry as much freedom in the carrying on of its business as possible, consistent with the belief on our part that notwithstanding the necessity of preserving individualism in the enterprise, that individualism, in some degree at least, must yield to the correlative situation of the operators in the same pool and to the public welfare. Again, viewing the whole problem in its practical bearing, your committee appreciates that the proposed statute, or even a substantial modification thereof cannot be enacted in the four or five oil-producing states unless it receives the general and whole-hearted support of a considerable majority of the industry. Hence, we proceed to an analysis of the provisions of the bill submitted by us for the compulsory co-operative development and operation of oil and gas pools.

The Compulsory Bill Analyzed

(a)

Section 1. Definitions.—Your committee believes that the definitions of "oil and gas pool," "oil and gas operator," and of "royalty owner," are sufficiently accurate and descriptive. More thought, however, must be devoted to the definition of the term, "co-operative development and operation of an oil and gas pool." And this is true for two reasons: To begin with, the subject itself is technical and intricate. In the second place, the essence of the bill resides in this concept. Throughout our whole study of this problem, we have been confronted with two conflicting purposes: A supreme desire to meet the wishes of the petroleum industry for as much voice in the regulations to be imposed as possible, and, at the same time, reconcile that necessity with the question of constitutionality. The committee believes that it has met the latter problem, but it leaves to the determination of the local oil organizations the sufficiency of its definition of "co-operative development and operation." This matter rises to high importance when we remember that the bill proposed contemplates the formulation by the operators involved of the particular co-operative plan that is to be submitted by them for the approval of the State Conservation Agency.

(b)

Sec. 2. Jurisdiction.—Your committee ventures no comment upon this simple provision.

(c)

Sec. 3. Conditional Jurisdiction of the Commission to Compel Co-Operative Development and Operation.—This provision carries out the purpose of your committee in suggesting as much self-government by the industry as the object to be achieved will permit. The machinery of the state is provided for, but whether or not it shall ever be invoked depends upon the will of the industry itself. We here provide that a majority of the operators in the same oil and gas pool shall have this right. We perceive that there is no magic in the idea of majority. The authority of the state may be resorted only when two-thirds or even three-fourths of the operators in the same pool unite. A decision between these possibilities is left to the local oil organizations. Your committee does believe, however, that there is me in its definition of the word, "majority" that is to say, that a numerical majori a majority of the acreage, and a major of the production, should come into t equation. If it should be determin that two-thirds or three-fourths of t operators in interest must agree bef the act becomes effective in relation the pool in which they are interest it is our opinion that to establish fa ness and equality the three elements ju alluded to should be represented.

(d)

Sec. 4. The Petition.—Your comm tee debated at some length the questi as to whether the bill in specific ter should set forth the necessary alleg tions of the petition to invoke the juri diction of the conservation agency whether that should be laid down general terms. Since the petition co ditions the jurisdiction of the conser tion agency, we finally concluded th it would be an advantage to the ind try precisely to know the allegatio which would support jurisdiction.

(e)

Sec. 5. Notice of Hearing, Hearin Rules, Regulations and Enforcement.— If a distinction can be drawn in the i portance of the several provisions of t proposed bill, the one dwelt upon he merits that consideration. The provisio when read in connection with the enti bill involves the following propositions First, a studied attempt by the commi tee to preserve freedom of action on t part of the industry. The co-operati plan to be applied to the particular po is intended to be the one agreed upo by the majority operators. The commi sion may reject the plan proposed, b it cannot modify it. The second ques tion involved in this provision is the ma ter of service by publication on no resident operators and royalty owner and on operators and royalty owner whose addresses are unknown to the pe titioners. This brings into view the di tinction between proceedings in rem an proceedings in personam. As the la primarily involves regulations upon t use of real property, we finally took th view that service by publication woul be sufficient. We do not pretend to sa that we are absolutely right in this po sition. In any event, the determinatio of the question should be left to th local oil organizations to be considere in the light of the local statutes and de cisions. Third, the great difficulty i this provision is to be assured that th machinery laid down here will stand th test of constitutionality. On both pri ciple and authority, one group of prop erty owners cannot prescribe the man ner in which another group may us their property. The principle applies eve where property partaking of a communi nature is involved. Under this provisio however, the ultimate act is that of governmental agency. To this considera tion must be added the further one that the definition of co-operative develop ment and operation in itself lays dow a rule of conduct. Here, the legislatur pronounces that the co-operative pla must be within the legislative purpose While your committee appreciates th difficulty of the question, we agreed u on the proposition that this section o the bill is constitutional. In further de fense of our recommendation in this re spect, we will say that the probabili ties are that the petroleum industry would never accept the principle of com pulsory development and operation of o pools unless it were to be restricted i the manner set forth in this section. A bearing upon the constitutional distinc tion between a prescribed use of prop erty at the mere will of other propert owners and the ultimate sanction of tha use by an official agency, we cite Ea bank vs. Richmond, 226 U. S. 137 Goried vs. Fox, 71 L. ed. 1228; Miller vs. Schoene, 48 Sup. Ct. Rep. 246.

(f)

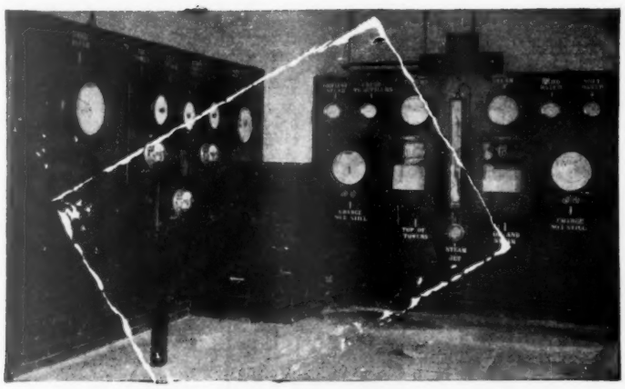
Sec. 6. Operators' Committee.—Thi provision has as its purpose the reser ing of self-government in the industry Broadly stated, it is the design of thi bill that a committee appointed by th operators in the pool, consisting of op erators therein, or their representative

GEORGE COYLE IS IN CRITICAL CONDITION

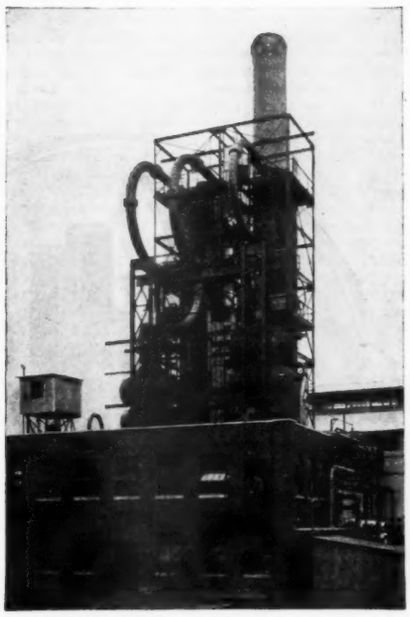
George Coyle, general superintendent of the Prairie Pipe Line Co., is critically ill in St. John's Hospital, Tulsa, following another operation this week. Mr.

George Coyle

Coyle, who has been incapacitated for several months returned from a Kansas City hospital just prior to the Christmas holidays, and was believed to be on the road to recovery when complications set in.



Control room of a complete distilling unit designed and erected by the Foster Wheeler Corporation, showing simplicity of the system.



General view of a complete two-stage atmosphere and vacuum distilling unit.

Flexibility of Operation and Simplified Control

The distilling unit shown above has a capacity of 6,000 barrels of crude per day. The first stage operates at atmospheric pressure, running various grades of gasoline, special naphtha, kerosene and mineral seal to meet varied market conditions. Pressable wax distillate and various lubricating stocks to rigid flash and viscosity specifications are received under vacuum in the second stage.

Simplified control, with a maximum of flexibility and low operating cost, makes this type of installation an outstanding unit in modern refinery practice.

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TUBE STILLS VACUUM PUMPS
WATER COOLED FURNACE SURFACES
BRASS AND COPPER TUBING AND PIPE

AERO UNIT COAL PULVERIZERS
AIR HEATERS CENTRIFUGAL PUMPS
CONDENSERS COOLING TOWERS
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the appointment to be sanctioned by the Conservation Commission, shall police the administration of the plan imposed. It might be urged that this committee should be given broader powers. This possibility has had the full consideration of the committee and was rejected because of the fear of constitutional objections. Having provided for a committee of operators who themselves are interested in the pool, we safeguard the situation of the other operators therein by placing at their disposal the services of the chief conservation officer of the state to investigate any suspicion or belief on their part that any other operator in the pool was violating the plan.

(g)

Sec. 7. Specific Enforcement of the Plan.—From the evidence reviewed by the committee, we were not only convinced that the only effective method of enforcing a compulsory co-operative plan was the specific enforcement thereof, but also that this enforcement must be prompt and summary. Considering the peculiar nature of the property dealt with, a money penalty for the violation of the plan does not protect the other operators in the pool, and, furthermore, a violation may not proceed even for a brief period without resulting in disaster to the other operators. In the main, the method of specific enforcement laid down here was drawn from the Federal Trade Commission Act. Two further considerations of distinct importance are involved in this section: First, it is provided that the court called upon to enforce the plan may permit the introduction of new evidence by both parties. Your committee concluded that this precaution might be necessary to meet the question of due process. Secondly, it is provided specifically that the mandatory injunction, or the receivership for enforcement cannot be stayed or superseded pending the appeal which is provided for in this section. This, on account of the character of the property dealt with, we regard as indispensable.

(h)

Sec. 8. Supplemental Rules and Regulations.—This provision is prompted by the necessities of the case. If the co-operative plan should cover the time of drilling in order to limit production from existing wells on account of market conditions, it follows that this feature of the plan would be temporary in its operation. An increased market demand would necessitate an entirely different course of conduct. Therefore, the bill should be sufficiently elastic to cover this possibility. In the next place, the boundaries of a prospective oil and gas pool can never be accurately determined. That will depend upon the development of the pool. Keeping in mind always that the correlative situation of the operators in the same pool is the primary basis of the legislation, it follows that if the development of a pool necessitated the inclusion of additional land or the excluding of other lands not part of the pool that machinery to accomplish this purpose should be set up. Furthermore, the statute may be resorted to upon the drilling of a test well. That well may come in dry. Under those circumstances, the operators interested in the pool might desire to return to their former status. Another thing, as the development of the pool proceeds, the co-operative plan laid down might prove inefficient. Other methods for the development of the pool might be more workable. This section provides for all of these contingencies.

(i)

Sec. 9. Suspension of Drilling Obligations.—No provisions of the proposed bill rises to higher importance than this one. At any time that the majority operators may agree upon a co-operative plan and apply to the conservation commission for the application of the plan to the entire pool, some operators therein will be confronted by express or implied drilling or producing obligations in their leases within the pool or with leases therein on the point of expiration unless production should be brought about within a very limited time. In almost any conceivable case it will be found that these outstanding obligations conflict with the co-operative plan. Unless the royalty owners can be brought within the compulsory provisions of the plan, the entire project must fall. This section assumes to perform this particular office. To begin with, no general rule of conduct can be laid down to meet the situation of the royalty owner. The operator who is confronted by outstanding drilling or producing obligations or the probability of an expiring lease must invoke the jurisdiction of the commission for relief. No other workable method is perceived by your committee. This brings into view some very important constitutional questions. The point presented here is an act of the state legislature which violates the impairment of contract clause of the Federal Constitution. It is fundamental, of course, that this provision of the Federal Constitution rises to no higher dignity or sanctity than the due process clause. If the police regulation is reasonable, it will survive the impairment of contract provision as well as that of due process. Upon this reasoning, your committee is of the opinion that the provision in this section for the suspension of drilling obligations whether related to express covenants or to expiring leases can be upheld as a proper and reasonable exercise of the police power. On the other hand, the striking down of the implied covenants for further development and for production to capacity present a graver question. Since the purpose of the bill proposed is to adjust the correlative rights and obligations of all persons interested in the pool, whether operators or royalty owners, your committee is of opinion that this part of the section can be upheld. We do not pretend to say that our view in this regard is not debatable. We do think, however, that a case of this character properly presented would induce a holding that the royalty owners must yield to all of the provisions of this act.

(j)

The two remaining sections of the bill, 10 and 11, relating to appeals and to separability require no comment other than to suggest the importance of maintaining the idea that an appeal will not supersede any regulation of the conservation commission establishing a co-operative plan. This is vital. At this point, your committee will venture another statement. The proposed bill applied only to pools that are discovered after the act goes into effect. We recognize the impossibility or the improbability of the application of the principle of compulsory co-operative development and operation to developed pools.

Compulsory Limiting of Production in Single Pools During Overproduction

Your committee has recommended but one measure involving downright coercion in respect of the minority operators of a pool, namely, that compelling the co-operative development and operation of the entire pool. The arrangement just alluded to contemplates more than the mere control of drilling and the rate of production from existing wells. It presupposes the application of a number of operating methods, both scientific and practical, to each separate property in the pool for the major purposes of bringing about orderly production and, through the efficient use of gas energy, to enlarge the ultimate oil recovery. This principle is put forth as a permanent and basic remedy to meet the problem of competitive drilling. But it must be remembered that the plan is restricted to new pools and does not take into account the emergency of overproduction or threatened overproduction that might characterize a number of old pools. To this stage, the only suggestion we have made to meet the condition last described is a unanimous agreement among all the operators in the pool to limit drilling and production during periods of actual or threatened overproduction. We have recommended the further process of state legislation that will withdraw unanimous agreements of this nature from the penalties of the state anti-trust laws. But here another practical difficulty intrudes. From the evidence before us, we find that it is frequently impossible to secure a unanimous agreement among the operators in the pool to restrict drilling or production even during periods of overproduction. This arises from the necessities or from the definite self-interest of the objecting operator or operators. It is your committee's opinion that coercion should be applied here also, but we are by no means certain that the industry at present is prepared to go that far. Nevertheless, we feel impelled to suggest that a statute could be framed that would empower a majority or even a larger proportion of the operators in the pool to compel the minority to restrict drilling and curtail production, certainly during periods of actual overproduction and perhaps during periods of threatened overproduction, in accordance with a plan to operate equally throughout the pool. Concretely, we would say that the machinery for compulsion set up in the act submitted here might be extended so as to enforce drilling and producing limitations on an entire pool, whether new or old, during periods of actual or threatened overproduction.

In Conclusion

In closing this report, your committee observes that the American Bar Association has no responsibility in this matter save that of promoting the public interest. An important agency of the Federal Government, consisting of four Cabinet officers, appointed by the President, sought the aid of the American Bar Association in the solution of the questions partially presented in this report. The inquiry of your committee has involved serious economic questions as well as debatable propositions of law. Your committee is convinced that the American petroleum industry will never find its proper place in our economic structure until it solves the problems that arise from the competitive drilling and operation of oil and gas pools. Whether that is to be accomplished by voluntary action in the industry or by the compulsion of laws is yet to be determined. After an extended inquiry into the two possibilities, we have reached the conclusion that, by force of circumstances entirely beyond the control of the industry, comprehensive voluntary action is improbable if not impossible. Upon the basis of this conviction your committee proposes one compulsory measure. Beyond this, your committee cannot go. We understand that this report is to be filed with the Federal Oil Conservation Board, the American Petroleum Institute, and the local oil and gas associations in the important oil-producing states. Whether these agencies will accept all or any of the suggestions made in this report does not concern the committee. We do feel, however, that with a presentation of this report, your committee has discharged its full duty to the American public.

J. L. SHAKELY IN CHARGE OF MIDWEST DIVISION

John L. Shakely, formerly vice president in charge of sales for the Frick-Reid Supply Corp., has been made executive vice president in charge of the Midwest division including the States of

—Photo by Alvin Krupnick.
John L. Shakely

Oklahoma, Kansas, Texas, Louisiana, Arkansas, New Mexico and Missouri.

Mr. Shakely has been with the Frick-Reid Supply Corp. since 1914, and brought a banker's viewpoint to the supply business. Prior to his connection with Frick-Reid, he was cashier of a Pittsburgh, Pa., bank, and he entered the Frick-Reid service as assistant sales manager, and later was promoted to vice president in charge of sales.

A native of Pennsylvania, Mr. Shakely was born in Clarion County, and has been a resident of the oil country almost all his life. Aside from the business of selling oil field equipment, his hobby is fine saddle horses.

Succeeding Mr. Shakely as vice president in charge of sales is Robert McCoy, Jr., former sales manager, who has been with the company for 15 years. O. A. Griffey, former vice president of the First National Bank & Trust Co. of Tulsa, has been placed in charge of credits.

PROPOSED MEASURE FOR VOLUNTARY CO-OPERATION

(Continued from Page 31)

original gas pressure and energy to the end that orderly production from said pool shall be brought about and for the further purpose of enlarging the ultimate recovery of oil and gas therefrom. (6) A method or methods common to the pool for the injection of gas, air, or any other substance or vapor, for the purpose of restoring the pressure in the oil producing sand, or sands, to the end that the objects set forth in the last preceding provision may be accomplished. (7) The determination and application of any other method or methods of developing and operating an oil and gas pool for the purpose of effecting economies in development and operation, bringing about orderly production, conserving the gas energy thereof, and enlarging the ultimate recovery of oil and gas therefrom.

Jurisdiction Defined

Section 2. Jurisdiction. Subject to the limitations of this act, the..... Commission of ..... is hereby vested with jurisdiction, power, and authority to carry out the provisions hereof, and to prescribe, promulgate, and enforce such rules and regulations as may be necessary for said purposes.

Section 3. Conditional Jurisdiction of the Commission to Compel Co-operative Development and Operation. Should a majority of the operators in a new oil and gas pool, as defined herein, agree in writing upon a co-operative plan for the development and operation of said pool, in accordance with all or any of the methods prescribed in Subdivision E of Section 1 hereof, they may cause one or more of their number to prepare, sign, verify, and file with said commission a petition substantially in the form required under the next succeeding section hereof for the compulsory co-operative development and operation of each separate holding in said pool, in accordance with said plan. To constitute a majority of operators for the purposes of this act, the following requirements shall apply: If at the time of the signing of the agreement in this section provided for, the area covered thereby, or any part thereof, is producing oil or gas in paying quantities, said agreement, to be effective for the further provisions of this act, shall be signed by a numerical majority of the operators interested in said pool, who, at the same time, represent a majority of the acreage thereof, and a majority of the production therefrom. If at said time said pool is not producing, said agreement shall be signed by a numerical majority of the operators interested in said pool who represent a majority of the acreage thereof. Subject to the filing of said petition, as required under this section and Section 4 hereof, said commission

shall have jurisdiction to consider and order the compulsory co-operative development and operation of the oil and gas pool described therein, in accordance with the other provisions of this act.

Form of Petition

Section 4. The Petition. In substance, the petition required under the next preceding section hereof shall contain the following allegations: (a) A description of the lands embraced within the prospective oil and gas pool. (b) The names and addresses of all operators owning holdings therein, the extent of the holdings of each, and the estimated daily production of each, if any. (c) Where known, the names and addresses of all royalty owners interested in said pool. (d) Whether or not at the time of the filing of said petition, said pool is producing; and if so, the date the initial discovery well was brought in. (e) That a majority of the operators in said pool have agreed in writing upon a plan for the co-operative development and operation of the same, the original plan with the signatures of the majority operators thereto to be appended to the petition. (f) That agreement to said plan by all operators interested in said pool had been sought but could not be obtained. (g) Such other material facts as would show that the plan, if adopted by said commission, would protect the correlative rights of all operators and royalty owners in the pool, and conserve or tend to conserve the oil and gas resources of the State. (h) The names of ..... persons who are operators in said pool, or representatives thereof, who had been selected by the majority operators as an Operators' Committee to perform the duties imposed under the further provisions of this act. (i) The prayer of said petition shall be that the co-operative plan appended thereto shall be established and enforced against all operators and royalty owners in said pool through rules and regulations to be prescribed by said commission in the manner hereinafter provided.

Program for Hearings

Section 5. Notice of Hearing—Hearing, Rules and Regulations, and Enforcement. Upon the filing of a petition under the preceding sections hereof said commission shall set the same for hearing within.....days from such filing, and cause due and timely notice of the time and place thereof, and of the nature of the petition to be served on all operators and royalty owners interested in the oil and gas pool described therein. In respect of nonresidents and operators and royalty owners whose addresses are unknown to the majority operators, as may be shown by their petition, notice by publication, for the purpose of this act, shall be deemed valid. The commission, by regulations, shall prescribe the time, form, and manner of service of the notices required above, the time for filing written objections to the granting of the petition, the procedure at all hearings, and the method of receiving evidence, such regulations further to provide that all proceedings and evidence at any hearing conducted hereunder shall be reported and forthwith transcribed. Said commission shall have the power to compel the attendance of witnesses and the production of material books and papers, and to administer oaths. If upon said hearing said commission shall find that the evidence supports the allegations of the petition of the majority operators, that the objections of opposing operators or royalty owners, if any, are not sustained, and specifically, (a) that the co-operative plan appended to the petition embraces all or part of the operating methods prescribed in Subdivision "e" of Section 1 hereof, (b) that said plan fairly and equitably protects and adjusts the correlative rights of each operator and royalty owner in said pool, (c) that said plan, if adopted, will conserve, or tend to conserve, the oil and gas resources of the State, then the commission shall have the jurisdiction, by appropriate regulations to that effect, to direct and order the development and operation of each separate holding in said pool, in accordance with said co-operative plan, and the further jurisdiction to enforce said regulations in the manner hereinafter provided. The commission shall reduce its said findings to writings, and all its findings of fact if supported by substantial evidence, shall be conclusive. If the findings of said commission upon all or any of the issues aforesaid shall be to the contrary, said petition shall be dismissed at the cost of the majority operators.

Committee of Operators

Section 6. Operators Committee. Concurrently with the adoption by said commission of regulations for the compulsory co-operative development and operation of an oil pool hereunder, said commission shall appoint as an Operators' Committee the persons named in the petition of the majority operators, who shall hold office for one year from the date of their appointment. Each year thereafter during the period said plan, or any modification thereof, as hereinafter provided, shall remain in force, the operators interested in said pool, by a majority vote shall choose an Operators' Committee to hold office for the ensuing year, such committee to consist of operators interested in said pool, or representatives thereof. The meeting for said election shall be had at least fifteen (15) days before the expiration of the term of the committee then in office, and the call therefor shall be made by the committee then in office, and the same shall be addressed to each operator interested in the pool. The retiring committee shall certify the result of the election to said commission in writing, and, thereupon, said commission shall make an order appointing said persons as the Operators' Committee in respect of said pool to hold office for the ensuing year. Said Operators' Committee, under the supervision and direction of the chief oil and gas inspector of the State shall possess the power to enter upon any lands embraced in the pool, investigate the methods of development and operation thereof, and to inspect only such records of the operator as may show his production from the pool. And if said committee, in the discharge of its duties, shall find that any operator is violating any substantial provision of the plan, the nature of such violation, and the name of the operator shall be certified to said commission by said committee in writing. Provided, should any operator subject to the plan have reason to believe that any other operator subject thereto is violating any of the substantial provisions thereof, then, upon written complaint to said commission to that effect, said commission shall direct the chief oil and gas inspector of the State, or any of his deputies, to investigate such complaint and report his findings in respect thereto to the commission in writing.

Method of Enforcement

Section 7. Specific Enforcement of the Plan. If, under the next preceding section, a complaint shall be filed with the commission that a substantial violation of a co-operative plan has occurred, said commission shall set the matter for hearing within five days from such filing and the offending operator shall be given three days' written notice of the time, place, and object thereof, by personal service; and if said operator does not maintain an office in the State, service may be had on his employe in charge of the land, lease, or leases, which, it is alleged, are being developed or operated in violation of the co-operative plan applicable thereto. If upon such hearing the commission shall find that said operator is violating any substantial provision of the co-operative plan to which his land, lease, or leases are subject, the commission forthwith shall make an order, directing him to desist therefrom, and if said order is not obeyed within one day from the service of the same, as above provided, the commission forthwith shall certify and file with the Attorney General of the State a complete transcript of all proceedings had before it wherein the regulations for the development and operation of the particular pool were established, and wherein it was found that said operator had violated said regulations. Whereupon it shall be the duty of said Attorney General, in the name of and on behalf of the State, forthwith to bring an action against said offending operator in the ..... court of the county or counties wherein the land, lease, or leases which are being developed or operated in violation of said regulations are situate, for a mandatory injunction against said operator, commanding obedience to said regulations, or, in lieu thereof, for the appointment of a receiver to take charge and control of said land, lease or leases, and to develop and operate the same under said regulations of said commission. Said court is hereby vested with jurisdiction to try and determine causes of this character, and all said causes shall have precedence over all other proceedings in said court. Said court shall have the power to try and enter its decree or decrees in said cause whether in respect of a temporary injunction, appointment of a receiver, or in relation to the merits, upon the certified transcript of the proceedings had before said commission, as above provided. Provided, upon a proper showing, the court may allow either party to adduce additional evidence. An appeal shall lie from any temporary or final order or judgment entered under this section to the Supreme Court of the State. Provided, further, that if the trial court shall issue a temporary or permanent mandatory injunction, or appoint a receiver under the provisions of this section, the order or judgment appealed from shall not be superseded nor stayed pending the appeal.

To Meet Changing Conditions

Section 8. Supplemental Rules and Regulations. Where a compulsory co-operative plan for a particular pool shall be in effect hereunder, and the same includes restrictions on the time for drilling wells in said pool, or on the rate of production therefrom, and if the majority operators in said pool shall agree that conditions have so changed that said limitations on drilling or producing, or both, should be changed or abrogated, or should said majority producers agree that said plan should be otherwise modified within the provisions of Subdivision "e" of Section 1 hereof, or should the further development of said pool indicate that the boundaries thereof, as established by the regulations of said commission, should be enlarged or reduced so as to confine said co-operative plan to the same oil and gas pool, then said commission, upon petition of said majority operators to that effect, and in conformity with the procedure provided for in respect of original petitions in Section 5 hereof, shall have the jurisdiction to entertain said supplemental petition: And should the commission find that said changes and modification are within the provisions of said Subdivision "e" of Section 1 hereof, that said plan as modified protects the correlative rights of all operators and royalty owners in said pool, and that the same will conserve, or tend to conserve, the oil and gas resources of the State, said commission shall have the power, by supplemental regulations, to put said revised or modified plan into effect, all the other provisions of this act to apply thereto with the same force and effect as in the case of original proceedings for a compulsory co-operative plan of development and operation. Provided, said commission, upon the petition of said majority operators, and the same procedure, shall have the power, by its order, to abrogate and vacate any co-operative plan when such action on its part will not injure the operators and royalty owners in said pool in their correlative rights or be prejudicial to the public interest.

Suspension of Obligations

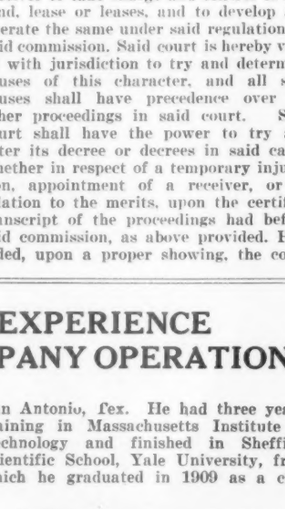
Section 9. Suspension of Drilling Obligations. The underlying purpose of this act is to bind alike the operators and the royalty owners in the same pool by the terms of any compulsory plan for the development and operation of such pool under the provisions hereof. If at any time while a petition for the compulsory co-operative development and operation of an oil and gas pool is pending, or thereafter while the same shall be in effect, any operator interested in said pool shall find that said proposed or effective plan is in conflict with any drilling or producing obligations of his lease or other contract of whatsoever nature covering lands in said pool, or that said plan, if enforced, will or may deprive him of the right to do the drilling necessary to carry any lease beyond the fixed term thereof, then he may file his intervening petition in the original proceeding before said commission wherein said co-operative plan is proposed, or wherein the same already has been established by the regulations of said commission, and all the royalty owners interested in said lease or contract shall be made respondents to said petition. Said intervening petition shall allege in what particulars said co-operative plan conflicts with said operator's drilling or producing obligations, and a copy of the lease or contract containing the same shall be attached to said petition. Thereupon, said intervening petition shall be set for hearing on the day set for the hearing on said original petition for the imposition of said co-operative plan, or, if said plan already has been established, then within.....

R. OGARRIO HAS WIDE EXPERIENCE IN THE TEXAS COMPANY OPERATIONS

R. Ogarrio, who became vice president of The Texas Company in charge of production, following the resignation of D. J. Moran, entered the service of The Texas Company of Mexico as assistant engineer at Tampico on October 10, 1916. In December of that year he was transferred to Houston and during the next several months was engaged in the preparation of plans for the Tampico works, Agua Dulce wokrs and the Tepetate-Agua Dulce pipe line, all The Texas Company operations. In 1917 he returned to Tampico as construction engineer and served in that capacity until the facilities mentioned were completed and put in operation.

In June, 1918, Mr. Ogarrio was made assistant general manager of the refining and pipe line departments of The Tex. Company of Mexico and promoted to general manager in January, 1920. In July, 1922, he was made general manager of the producing department. In 1923 he was assigned to the supervision of the exploratory work in Panama and South American countries and in 1925 was made general manager of the Texas Petroleum Co. operation in South America. Then he was transferred to Houston and later to New York as assistant to Mr. Moran.

Mr. Ogarrio is a native of Chihuahua, Mexico. He received elementary and high school training in St. Louis College in San Antonio, Tex. He had three years' training in Massachusetts Institute of Technology and finished in Sheffield Scientific School, Yale University, from which he graduated in 1909 as a civil engineer. He served some years as an engineer in the Department of Public Works of the Republic of Mexico before joining The Texas Company.



R. Ogarrio

days from the filing of said intervening petition. Notice by publication may be given to said respondents under the conditions set forth in Section 5 hereof. And in respect of said intervening petitions, said commission shall have the power, by regulation, to establish the same procedural requirements as are provided for in said Section 5. If at any hearing upon an intervening petition and any objection or objections thereto filed by the royalty owner or royalty owners, the commission shall find that the lease or leases, contract or contracts, in question impose implied obligations on said operator for the drilling of an additional well or wells on any property or properties within said pool after a paying well has been drilled in thereon, or that the same impose the implied duty of producing all wells thereon to their full capacity, and that both of said implied obligations or duties are in conflict with the regulations for the compulsory co-operative development and operation of said pool, then said commission shall have the power, by an appropriate order to that effect, to direct that said property, or properties, shall be developed and operated in accordance with said co-operative plan, all of said implied obligations or duties to the contrary notwithstanding. Provided, nothing herein contained shall authorize said commission to enter an order which will cause any royalty owner to suffer the drainage of his property, or properties, or the loss of gas energy. If upon said hearing said commission shall find that said lease or leases, contract or contracts, contain express obligations for the drilling of a well or wells which are in conflict with said regulations, or that said operator unless relieved from the fixed term of a lease or leases must drill the same notwithstanding the requirements of said co-operative plan in order to extend said lease or leases beyond the fixed term, then said commission, by an appropriate order, shall have the jurisdiction to suspend said drilling obligation, or obligations, whether related to express convenants to drill, or to prevent the expiration of a fixed term, for a reasonable time not beyond the period of two years from the date that the drilling obligation, or obligations, arose, nor beyond the period of two years from the expiration date of the fixed term of said lease or leases. Any order made by said commission under the provisions of this section shall constitute a valid defense to any action in damages for failure to drill or to produce to capacity, or to any suit in equity for the cancellation of any lease or contract for failure to drill or produce existing wells to capacity, or for the cancellation of a lease or the quieting of title in respect thereto, on the ground that the fixed term thereof has expired without production, brought by any royalty owner or royalty owners against any operator in any of the courts of this State.

Appeals Provided

Section 10. Appeals from Rules and Regulations. Any operator or royalty owner aggrieved by any rule, regulation, or order made hereunder by said commission may appeal to the Supreme Court of the State for the vacating or modification of the same. (Method of appeal to be stated.) Provided, no such appeal shall operate to suspend nor stay the enforcement of the rule, regulation, or order appealed from.

Section 11. Separability. If any provision of this act, or if any rule or regulation of said commission made hereunder, shall be declared unconstitutional or invalid, the validity of the remainder of the act, and the validity of the other rules and regulations made by said commission hereunder, shall not be affected thereby.

PROPOSED MEASURE FOR ENFORCING CO-OPERATION

(Continued from Page 31)

forth in the last preceding provision may be accomplished. (7) The determination and application of any other method or methods of developing and operating an oil and gas pool for the purpose of effecting economies in development and operation, bringing about orderly production from the pool, conserve the gas energy thereof and enlarge the ultimate recovery of oil and gas therefrom.

Unit Development

(e) The term, "agreement for the unit development and operation of an oil and gas pool," shall mean and contemplate an agreement among the operators of the same oil and gas pool, whereby (1) all the separate holdings in said pool are conveyed to a partnership, corporation, association, trustee, agent, or agents, in order that the same may be developed and operated as a single property, (2) a committee, or other common agency, shall be created by said operators with authority to develop and operate all of said holdings as a single property, (3) through the mutual exchange of assignments, or otherwise, said operators shall divest themselves of their respective titles in severalty in said pool, and upon a stipulated basis receive in return therefor respectively undivided interests in the entire acreage of said pool so that the same may be developed and operated as a unit.

(f) The term, "refinery consumers," shall include any person who directly, or indirectly, shall be purchasing, or offering to purchase, crude oil from any pool for use in any oil refinery, whether located in this State or elsewhere, and who at the time this act shall be operative shall own, control, or have at his disposal adequate facilities for transporting from said pool currently the oil purchased, or offered to be purchased, by him.

(g) A condition of actual overproduction in an oil and gas pool of this State shall be deemed to exist when the total current daily production therefrom, shall exceed by ..... percentum the total current daily purchases of oil therefrom plus the total current daily offers to purchase therefrom of the refinery consumers, as above defined, who are purchasing, or offering to purchase, oil from said pool.

(h) A condition of threatened overproduction in an oil and gas pool in this State shall be deemed to exist when by reason of the total current daily production therefrom, the capacity and history of the producing wells therein, the character of the producing formation, or formations, the number and location of the wells being drilled therein, and other conditions prevailing in said pool, it shall seem reasonably probable that an actual state of overproduction in said pool, as above defined, shall eventuate within the period of .....

Agreements Sanctioned

Section 2. Agreements for Co-operative and Unit Development. No agreement between and among the oil and gas operators owning separate holdings in the same oil and gas pool, made for the purpose of bringing about the co-operative development and operation of said pool, or made for the purpose of bringing about the unit development and operation of the same, as those terms are defined in Section 1 hereof, shall be held to violate any of the statutes of this State prohibiting monopolies, combinations in restraint of trade, or commerce, or trusts, nor to violate any of said statutes prohibiting acts, arrangements, agreements, contracts, combinations, or conspiracies in restraint of trade or commerce.

Section 3. Agreements During Periods of Overproduction or Threatened Overproduction. No agreement between and among the oil and gas operators owning separate holdings in the same oil and gas pool, made for the purpose of restricting drilling therein, or for the purpose of limiting production therefrom, or both, entered into during periods of actual or threatened overproduction in said pool, as said terms are defined in Section 1 hereof, which agreements shall be effective during said period, or periods, of actual or threatened overproduction only, shall be held to violate any of the statutes of this State prohibiting monopolies, combinations in restraint of trade, or commerce, or trusts, nor to violate any of said statutes prohibiting acts, arrangements, agreements, contracts, combinations, or conspiracies in restraint of trade or commerce.

DEEP HOLES CAUSE ENLARGED EQUIPMENT

(Continued from Page 33)

leum Exposition last fall, the head of a large supply house was standing at his company's exhibit. A friend approached him and said, "Pretty nice, you had this rotary at the show two years ago, and all you had to do was leave it here and start it up again." The supply man replied, "Two years ago we had a rotary that looked just like that one, and today it is obsolete. There's not a single part of this rotary which was in use or was even designed two years ago." The times are bringing rapid changes in the expansion of drilling equipment. Who knows what two years hence may develop?

CALIFORNIA GASOLINE MARKET UNSETTLED

(Continued from Page 29)

Little hope is held for a normal improvement during 1929, although conditions may be temporarily stabilized from time to time. Unless restricted through mutual arbitration or compulsory regulation production and development activities will continue at a high rate for another year with the result that California operators will be faced with a surplus production of crude oil, natural gas and natural gasoline.

The significance of this condition lies in the fact that surplus production will adversely affect marketing conditions unless the larger refiners can absorb the excess production of independents.

Daily production of crude in Califirnia crossed the 700,000 bbls. mark during the last week in December and 1929 will be ushered in on the wave of a rising production which will extend over a period of several months. The Buckbee zone at Santa Fe Springs will not prove as an important factor as originally believed but the intermediate Nordstrum zone will offset this to some extent. Only a few wells have been completed in the Nordstrum horizon up to the present time but this zone, which has a thickness of approximately 450 feet on top of the structure, should result in substantial production.

It is believed that production at Santa Fe Springs will fall off quite rapidly within the next few months and while this might cause a temporary decline in state production it should lead to deeper drilling. Paleontological work indicates that the Miocene, which proved so highly prolific at Long Beach, has not yet been encountered at Santa Fe Springs. It is quite likely therefore that additional deep zones will be opened below the present Buckbee horizon at Santa Fe Springs, which, if consistent, should result in substantial production. The probability of deeper drilling at Santa Fe Springs presents a far more threatening aspect than the development work now under way involving the Nordstrum and Buckbee horizons. The formation at Santa Fe Springs is geologically favorable for the accumulation of oil in substantial quantities down to 8,000 feet, and perhaps even deeper.

No concerted attempt has been undertaken to prevent the exploitation of possible horizons existing below the Buckbee zone but some steps along this line should be undertaken with as little delay as possible. This may not be an original suggestion, but such a move would be especially apropos at the present time as it would be exceptionally welcome to all operators and prevent what may result in a very serious situation later in the year.

Expect Large Production

All indications point to the fact that 1929 will be a big year from a production standpoint if drilling operations throughout the State are permitted to continue unabated. Santa Fe Springs presents the most difficult problem but this field is not the only area in California which will show increased production during the next 12 months. The output at Long Beach has been unusually stable for the past several months due to consistent deep zone development and if deep production is ultimately developed in the Los Cerritos town lot area or northwest extension it will continue to be an important factor for some time to come. The General Petroleum has just picked up a deep sand of undetermined importance in its No. 1 Ransome, located in the Los Cerritos area, and if this well secures commercial production it should lead to the drilling in of perhaps another 100 wells.

The Elwood Terrace Field of Santa Barbara County will also show increased production during 1929 as the Barnsdall and the Rio Grande Oil Cos., which control practically all of the potentially productive acreage, are expected to engage in a progressive development campaign. It might be mentioned in passing that there is an excellent possibility of opening up another similar field between the Elwood Field and the city of Santa Barbara, located about 12 miles to the east and exploration is scheduled to get under way shortly.

Kettleman Hills

The Kettleman Hills Field of Kings County, opened up by the Milham Exploration Co. recently, is not expected to become an important factor in state production during 1929, although it will of course reflect development work during the latter part of the year. The acreage in this district is all held in relatively large blocks and development work will be carried out along conservative lines and according to well established principles of oil field development.

The prolific Ventura Avenue Field will probably continue to produce in excess of 50,000 bbls. per day all next year and may possibly reach 75,000 bbls. due to the bunching of new completions. This field, however, can be regulated very satisfactorily and its production will be governed accordingly. The Lawndale Field of Los Angeles Basin is still an unknown factor but may possibly result in substantial production late in the year. This district contains the usual subdivided town lot area and will be the scene of an intensive drilling campign if subsequent work proves the existence of a prolific sand. Drilling operations in this field have been rather slow in getting under way due to the depth at which production is secured and also because of the fact that the location and extent of the field have not yet been determined. The Potrero Field may also witness a town lot drilling campaign but this will not be definitely determined for another 30 days as the California Eastern's No. 1 Pollard will require that length of time to reach the projected depth at which production is anticipated.

Production Increasing

State production averaged 663,584 bbls. daily during the month of November and preliminary estimates indicate that it will show a much higher rate during December and January. The increase in state production of 36,778 bbls. daily during November was due primarily to deep zone development at Santa Fe Springs and the opening up of approximately 7,000 bbls. per day of curtailed production in the west front area of the Kern River Field. The daily output at Santa Fe Springs during November, 54,693 bbls., was 18,726 bbls. in excess of the average for October and subsequent completions have brought the current output up to approximately 110,000 bbls. daily with considerable more to come. Total fluid stocks on the Pacific Coast increased 1,269,491 bbls. during November, the total storage approximating 138,716,677 bbls. at the close of the month. Heavy crude and refinery residuum increased 1,323,076 bbls., although light refining crude declined 79,917 bbls. Gasoline and naphtha distillates were both accumulated during November, stocks of the former increasing 176,098 bbls. and the latter 195,798 bbls.

Refiners Very Active

California refiners ran 17,824,552 bbls. of crude oil to stills during the month of November. This represents 17,744,635 bbls. of the November crude oil production of 19,907,526 bbls. and 79,917 bbls. which were withdrawn from storage. Gasoline production during the month approximated 5,786,200 bbls., of which 837,-

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495 bbls. were produced by cracking or synthetic processes and 4,948,705 bbls. by straight distillation or methods other than cracking.

Natural gasoline plant operators treated 33,279,627,000 feet of natural gas during November and effected a recovery of 47,621,777 gallons of natural gasoline, the unit recovery being 1.43 gallons for each 1,000 feet of gas treated. Oil absorption plants produced 32,451,495 gallons of natural gasoline, combination compressor and oil absorption plants 14,897,404 gallons and compressor plants 254,154 gallons.

AMERICA LEADS IN OIL PRODUCTION

(Continued from Page 32)

376,000 bbls., the remainder of the world produced only 4,617,000 bbls. The Bradford Field was at its peak in that year and produced 25,846,000 bbls. This one field produced over 90 per cent of the output of the United States in that year and 80 per cent of the world's total. The same amount of production would represent only 2 per cent of the world's production in 1928, so great has the oil business grown in 47 years. Pennsylvania's peak year was in 1891 when the McDonald and other Southwest Pennsylvania fields were at their height. In that year it produced 31,424,000 bbls. It was still America's leading oil producer, but Russia surpassed it with a total of 34,573,000 bbls. Pennsylvania reached a low level of 7,408,000 bbls. in 1918, after which modern producing methods were put into play on a large scale and the field began to increase its output until in 1928 it was estimated to have produced about 9,850,000 bbls. The bulk of this increased production comes from the Bradford Field where flooding the sands with water and the use of compressed air and gas in restoring pressure has greatly increased the output of crude.

Ohio Once Ranked First

Ohio, where oil was discovered commercially in 1876, did not rank among the leaders until 1888. It ranked first in the United States in 1896 when it produced its peak figure of 23,941,000 bbls. The great Trenton Rock fields of western and northwestern Ohio gave the greatest importance to Ohio as an oil producer. In the early days of this oil area, which has always been known as the Lima Field, the production was believed to have little value owing to its sulphur content, but a chemist found a way to treat the crude, removing the objectionable sulphur content with its vile odor and rendering the oil refinable and marketable. Thereafter the field advanced rapidly. In 10 years from 1895 to 1904 it produced an average of more than 20,000,000 bbls. annually. Some of the best oil in America is and has been produced in the southeastern part of the State. It is classified as "Pennsylvania Grade" crude and brings $3.60 per barrel, while Lima oil is quoted at $1.60 per barrel.

Kansas Still in the Running

Kansas ranks eighth in production with a total of 504,818,000 bbls. from 1890 to 1928. Kansas was an oil state for many years before it jumped into prominence. It did not produce 1,000,000 bbls. in any year until 1904, when it registered an output of 4,251,000 bbls. Then it slumped off year by year, until in 1910 it had fallen to 1,128,000 bbls. The Butler County fields gave it impetus and in 1917 when the Towanda Pool was opened it became one of America's prominent producing states and scored its peak of 45,451,000 bbls. in 1918. Since that time many new fields have been brought in, notably in Greenwood, Cowley, Sumner and Marion Counties, and at the close of 1928 Sedgwick County bade fair to become a prominent oil field, which will be developed this year.

Louisiana's Good Record

Louisiana, ninth in rank, entered the oil column in 1902 and three years later was a large producer of oil. The Caddo Pool Field was its first large oil area, but it was not until 1920 when Haynesville and Homer were going strong that the State reached its peak of 35,714,000 bbls. for a year. In 1928 the Gulf Coastal end of the State was in the limelight and that part of Louisiana is yet one of the potentially large production from salt domes discovered since the introduction of geophysics in the oil industry.

Illinois a Consistent Producer

Illinois is tenth in rank among the world's oil areas. Commercial production was first recorded in 1889, but it was in 1906 the State became a prominent producer. In that year its output was 4,397,000 bbls. The peak year in Illinois was 1908, when 33,686,000 bbls. was produced. This was a better record than that made by Pennsylvania in its best year. In 1908 only two states, Oklahoma and California, ranked above Illinois in crude output. In five years, or from 1908 to 1912, both inclusive, the State average 31,528,000 bbls. per year.

Dutch East Indies

Eleventh in rank in the world and third among foreign fields are the Dutch East Indies. Since 1893 the islands have produced 383,398,000 bbls. with a peak in 1925 of 25,967,000 bbls. It is estimated that in 1928 the islands produced 21,500,000 bbls. but it is believed they could do much better than 60,000 bbls. per day any time they are called upon. Like all the fields controlled by the Dutch or the English the oil is extracted only as needs require. There is never any "orgy of drilling" in Sumatra and Java, Persia or Mesopotamia such as there is in Oklahoma or in Texas and California. These Dutch-English fields are being held back for a grand clean up when America's oil resources are permanently on the decline.

West Virginia a Steady Producer

West Virginia, opened in 1876, did not reach the height of its development until 1900 when it produced 16,196,000 bbls. One feature of West Virginia has been that its production "stood up" more consistently than most of the producing areas. From 1896 to 1915, 20 years, the State produced an average of 11,766,050 bbls. per year with a high of 16,196,000 bbls. and a low of 9,095,000 bbls.

Arkansas Furnished Sensations

Arkansas is a comparatively young field, having been opened in 1921 but in the nine years of its existence it has reached thirteenth in rank in producing divisions of the world. The El Dorado and Smackover Fields, both located in the southern part of the State, have been the largest producers and in 1925, when the Smackover deep sand was developed the State reached its peak of 77,398,000 bbls., or an average of more than 210,000 bbls. per day for the year. Most of the oil came from two counties.

Rumania's Good Future

Rumania, which was producing oil commercially two years before the Drake well was drilled has been developed so slowly that its best producing year is believed to have been the one just past. It is credited with an estimated production of 28,000,000 bbls. in 1928, and since 1857 has produced 302,148,000 bbls. Rumania is one of the world's fields with a future that may exceed any producing record it has made in the past. From 1857 to 1898 it never produced more than 776,000 bbls. in any year. In the past five years it has been steadily increasing its output. Government interference has had much to do with its slow development, but a more liberal policy is said to be favored by the present peasants' government.

Persia, which ranks next below Rumania is another field with a great future. It has produced 298,953,000 bbls. and its best year was in 1927 with 39,688,000 bbls. although 1928 may better this record. Wells of enormous production are drilled in that country but they are only drilled as the oil is needed.

South America a Comer

Among the balance of the world's oil producing divisions Venezuela takes first rank as a potentially great field. It was opened in 1917 but it only became great within the past four years. In 1927 it produced 63,124,000 bbls. and it is estimated that it produced 105,000,000 bbls. in 1928. Its production has been limited to the facilities of the producing companies to get the oil to market. It is in a sense a local field so far as the United States is concerned because the product can be delivered to refineries along the Atlantic and Gulf Coasts quickly and cheaply after it once leaves Venezuela. Colombia is another South American field with a future. It is estimated to have produced 20,000,000 bbls. in 1928 which is not much more than half of its total production of 43,219,000 bbls. produced since 1922. Most of this oil comes to the United States and is in direct competition with oils produced here. Argentina's production finds a ready market in that part of South America. The country has produced 51,500,000 bbls. since 1907 and its peak was reached in 1928 with an estimated production of 8,800,000 bbls. Peru, where oil was discovered commercially in 1896 has produced 92,072,000 bbls. and had its best year in 1926 when its output was 10,782,000 bbls. Like Argentina, Peru's remoteness gives its sister countries, Venezuela and Colombia, a considerable commercial advantage.

The accompanying table gives the names and production and other data of the other principal producing divisions of the world. The case of New York State is of particular interest. In that State all the production lies in two southwestern counties. Oil was discovered in 1882 since which time the State has produced 68,295,000 bbls. Its peak came in the first year, when a total of 6,685,000 bbls. was produced. It fell off steadily to 874,000 bbls. in 1916 since which time the production has increased and in 1928 it yielded approximately 2,490,000 bbls. the best record it has made since 1885. Water flooding, and air and gas pressure artificially applied, were responsible for this increase. A short time ago a 3,900-foot sand was discovered in Allegheny County which produces 4,000,000 feet of gas or more per day, with a spray of high gravity oil, which adds to the field's importance.

LOW OIL PRICES CAUSE WITHDRAWAL OF LANDS

(Continued from Page 32)

the sale. Mr. Robinson, however, is reported to have told the Governor he questioned the soundness of the opinion.

Attorney-General's Opinion

Mr. Trueheart's opinion is as follows: "By your letter of the twenty-first, you request our legal opinion as to your power either to withdraw from sale oil and gas leases on 103,000 acres of university land advertised for January 2, 1929, or to postpone such sale till a later date in said month.

"You are respectfully advised that, in our opinion, though you do not possess the power to withdraw or postpone such sales beyond some date in January, you have the power to postpone such sales till a later date in said month.

"Your question is predicated on the fact that you have received some specific and many general requests for advertisement of university mineral lands which are deemed by you to be a sufficient demand within the terms of section 2 of the university mineral leasing act of 1925, requiring sales 'when there is land in demand.' Since there is land in demand you are mandatorily required to sell, in compliance with the legislative prescription as to the times of sales. Consideration of expediency could not give rise to an implication of power in you to thwart the legislative intent that sales must be made less than once each month when there is land in demand.

"Your question is also predicated on the fact that the board of regents of the university believes that the present economic conditions surrounding the production of crude oil will not be conducive to the university getting a fair value for oil and gas leases sold on January 2, next. We assume also that there is reasonable prospect of improvement in conditions during the course of the month of January. We are of the opinion that on this basis a postponement of sales to some later date in January is necessary to the proper execution of the purpose of the law and from such necessity is implied the power in you to postpone the sale.

Main Purpose of Act

"The main purpose of the university leasing act of 1925 was doubtless to get the most from the oil and gas lands belonging to the university fund. It was a compliance by the legislature with the constitutional direction that the university lands should be sold and that the legislature should make provisions as to the regulations, times and terms of sale. In doing this it did not usurp the executive function as to details with respect to regulations, times and terms of such sales. On the contrary, it left the Land Commissioner largely untrammeled in the proper effectuation of this duty. The terms provided in the law are simply minimum terms, sale to be made to 'the applicant that pays the most.' The times provided are simply 'not less than once each month when there is land in demand and at 10 o'clock a. m. on the date fixed therefor,' and the Commissioner was expressly authorized to adopt such rules and regulations 'as may be necessary to the proper execution of its purpose,' that is to say, the purpose of getting the most substantial value for the university out of the lands. As said in Theisen vs. Robison, with respect to this same act:

" 'It was plainly competent for the act to empower the Commissioner to make such regulations as the act authorized in its mere administration in order that the Legislative will might be accomplished.'

Discretion Given

"Under the decision of the Theisen case the Land Commissioner is mandatorily required to sell oil and gas in any university land on receipt of a request to place it on sale; yet he is by the law given a discretion within the range of a month to fix on the particular day for sale. Having the power to fix the day, he certainly would have the power to alter a day fixed before its arrival, especially when a postponement would seem to be necessary to the proper execution of the law. Any expression of the power of alteration in the terms of the law is utterly unnecessary to its existence, since such power is implied from the purpose of the law, which is always paramount to its detailed expression.

"In our opinion you can withdraw your offer to sell on January 2, through advertisement of like kind originally made by you, provided, however, you at the same time fix another later date during the month of January when oil and gas leases on the 103,000 acres of university land in question shall stand for sale. Any other view would defeat the cardinal purpose of the framers of the Constitution, as well as the legislature, to realize as great a fund as possible from these lands, including their minerals, for the university.' (Theisen case)."

Governor Moody's statement upholding the effort to withdraw the leases is published on page 32 of this issue of The Oil and Gas Journal.

IN MEMORY OF A. C. BEDFORD

NEW YORK, Dec. 29.—A hospital bed in the North County Community Hospital, Glen Cove, L. I., has been endowed in memory of A. C. Bedford, former chairman of the board of the Standard Oil Co. of New Jersey.

When Chairman Bedford died three years ago the orders for flowers which poured into the company's New York headquarters from a hundred different sources reached a considerable sum. As the Bedford home had already been embarrassed by the wealth of floral tributes, it was deemed unwise to expend more money for such a purpose, and the idea was conceived of endowing the hospital bed, Mr. Bedford and a number of his friends having been interested in the hospital project. The endowment was delayed pending the completion of the hospital, but it has now been made and a suitably engraved tablet stands outside the ward commemorating the gift. The bed is in the adult general ward, and is endowed in perpetuity. The endowment amounted to $7,500, $1,695 of which was contributed by friends and associates of Mr. Bedford and the balance by the company.

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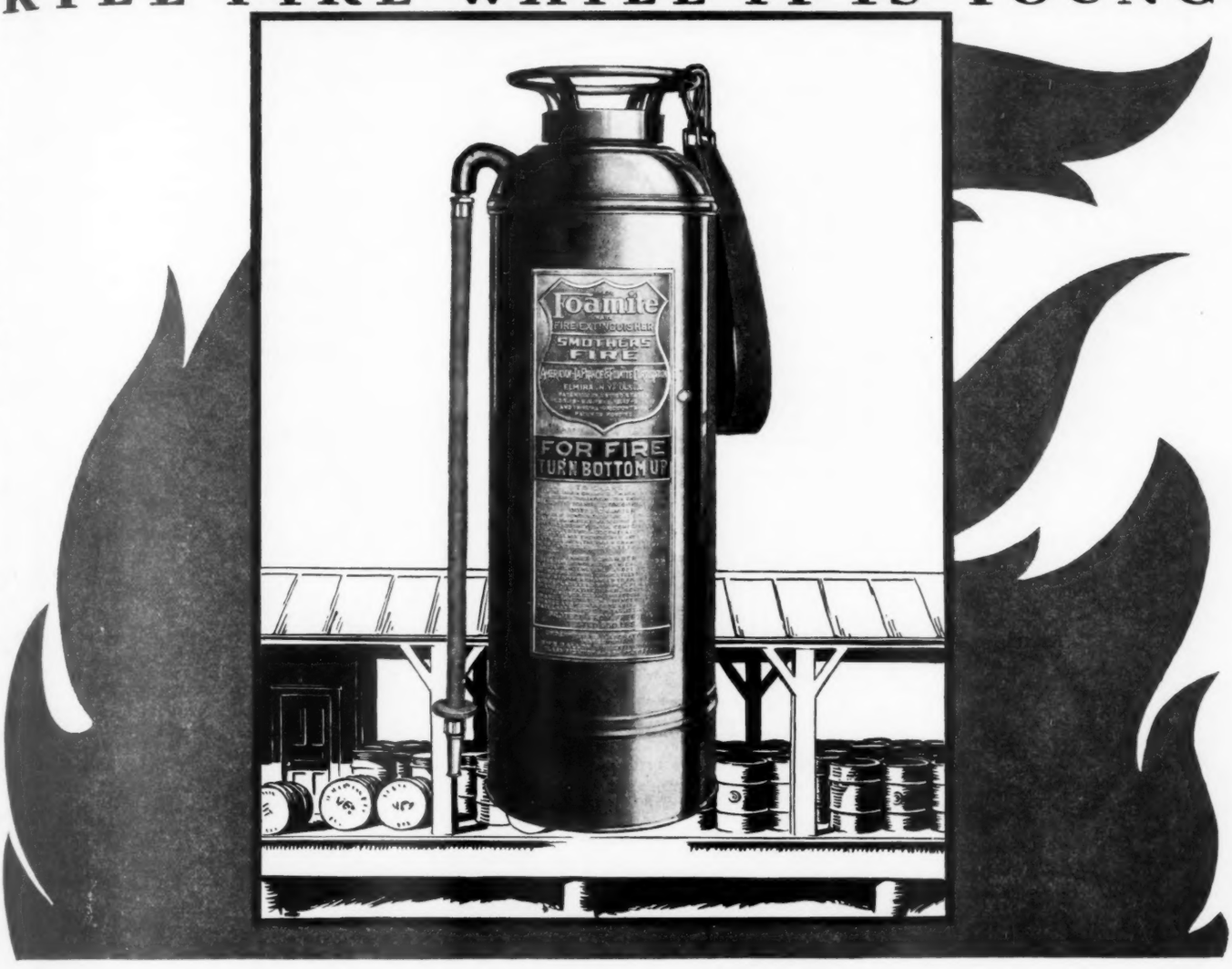

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Wherever there is a fire hazard—in and about every building—you need FOAMITE Protection in some form. In many cases the 2½-gallon size is sufficient. It generates over 20 gallons of fire-smothering *Firefoam*, with a range of 20 to 30 feet. It gives you real protection against small fires. Where greater capacity is desirable you may need the 5-gallon FOAMITE Extinguisher, or perhaps a 40-gallon FOAMITE Engine.

American-LaFrance and Foamite representatives are trained fire protection engineers. Ask them to make a survey of your property with recommendations for your particular risks. These representatives are located at points convenient to all principal oil producing and refining centers. They will gladly arrange a demonstration. American-LaFrance and Foamite Corporation, Engineers and Manufacturers, Dept. F-23, Elmira, N. Y.

AMERICAN-LAFRANCE AND FOAMITE PROTECTION

A Complete Engineering Service
For Extinguishing Fires

TEXAS PANHANDLE WILDCATS

(Continued from Page 39)

Crabtree Drlg. Co.'s No. 1, B. F. Talley, SW NE Sec. 114, Blk. M-2, B.S.&F. Sur. ... S.O. 2,400 ft; S.D. 2,735 ft.
Constantine et als' No. 1 Dial, 330 ft. S and E of NW cor. W half NW, Sec. 32, Blk. 25, H.&G.N. Sur. ... Location.
Danciger et als' No. 1 Shaw, 1,000 ft. N and 330 ft. W SE cor. SW, Sec. 5, Blk. 1, A.C.H.&B Sur. ... 35,000,000 ft. gas 2,290 ft; show oil 2,610-13 ft; run inserted liner 2,645 ft.

Danciger et als' No. 1 J. E. Williams, 330 ft. each way from NE cor. NW SW, Sec. 6, Blk. 1, A.C.H.&B. Sur. ... Rig.
Danciger et als' No. 1 Sheridan, SE cor. Sec. 134, Blk. 2, H.&G.N.R.R. Sur. ... Location.
Delmar Oil Co.'s No. 1 F. Foster, NW cor. SW, Sec. 55, Blk. B-2, H.&G.N. Sur. ... Show oil; 4,000,000 ft. gas 2,835-97 ft; T.D. 3,757 ft; to plug back to 2,950 and shoot.

Delmar Oil Co.'s No. 1 Chapman, 330 ft. each way from SE cor. NW, Sec. 10, Blk. 26, H.&G.N. Sur. ... Spud.
Empire G. & F. Co.'s No. 1, NE cor. Sec. 185, Blk. 5 ... Rig.
Eslick & McKinney's No. 1 Mrs. Hopkins, 330 ft. from NE, E half NE, Sec. 84, Blk. B-2, H.&G.N. Sur. ... Drlg. 1,750 ft.
Sines & Reiger's, formerly Eslick et als' No. 1 Mrs. J. A. Hopkins, NW cor. W 80 acres of SW, Sec. 84, Blk. B-2, H.&T.C. Sur. ... Pull. 6-in. csg. 3,206 ft.
Gulf Prod. Co.'s No. 6 J. B. Bowers-A, 330 ft. S and E of NW cor. W half Sec. 89, Blk. B-2, H.&G.N. Sur. ... Drlg. 2,925 ft.
Gulf Prod. Co.'s No. 4 Holmes-A, 990 ft. N and 330 ft. E of SW cor. W half SE, Sec. 87, Blk. 3, I.&G.N. R.R. Sur. ... Drlg. 2,441 ft., lime.
Gardner, Collins et als' No. 1 Saunders, 330 ft. each way from NE cor. of S 49 acres of W 100 acres, Sec. 3, B.&B. Sur. ... Drlg. 1,950 ft.
Magnolia Pet. Co.'s No. 3 W. Harrah, 330 ft. from NE cor. NW, Sec. 150, Blk. 3, I.&G.N. Sur. ... Drlg. 340 ft.
Magnolia Pet. Co.'s No. 1 Gething, 530 ft. each way from SE SW Sec. 14, Blk. A-9, H.&G.N. Sur. ... Spud.
Magnolia Pet. Co.'s No. 1 Saunders, 330 ft. from SE W half of NW, Sec. 4, Blk. 1, A.C.H.&B. Sur. ... Shot with 40 and 70 qts. 2,655-2,716 ft.; spraying 40 bbls. to d.d.

Malone et als' No. 1 Taylor, 990 ft. S and E of NW cor. NW, Sec. 22, Blk. B-2, H.&G.N. Sur. ... Building rig.
Marland Prod. Co.'s No. 1 Brown-Finley, 330 ft. S and W of NE cor. Sec. 32, Blk. B-2, H.&G.N.R.R. Sur. ... Rig.
McElroy Oil Co.'s No. 2 Bruce Bull, 155 ft. from N line and 240 ft. from W line of E 87.3 acres of Sec. 3, Blk. B-2, H.&G.N.R.R. Sur. ... Drlg. 2,564 ft.
McMan O. & G. Co.'s No. 2 Binkley, 330 ft. each way from NW cor. W half SE cor. Sec. 86, Blk. 3, I.&G. N. Sur. ... Show oil 3,124 ft; 3,190-3,203 ft; and 3,225-32 ft; T.D. 3,281 ft; swabbed 225 bbls. 10 hours.

McLlain Oil Co.'s No. 1 Back, 1,000 ft. from W. line and 330 ft. from N line of NW, Sec. 24, Blk. 25, H.&G. N. Sur. ... Bldg. rig.
Parton & Holt's No. 1 Gething, 330 ft. each way from SE cor. NE, Sec. 14, Blk. A-9 ... U.R. 10-in. 1,850 ft.
Phillips Pet. Co.'s No. 4 Johns, 330 ft. each way from NE cor. SE SW, Sec. 87, Blk. 3, I.&G.N. Sur. ... Drlg. 1,940 ft.
Phillips Pet. Co.'s No. 5 Johns, 330 ft. N and 990 ft. E of SW cor. SW, Sec. 87, Blk. 3, I.&G.N. Sur. ... Location.
Phillips Pet. Co.'s No. 1 Bob Olsen, NW cor. S half Sec. 64, Blk. B-2 ... T.D. 3,239 ft; plugged back to 3,-330 ft; shot with 440 qts. at 3,-119-3,222 ft; 600 ft. oil and 60 ft. wtr. in hole; drlg. 3,725 ft.

Plains Drlg. Co.'s No. 2 Saunders, 990 ft. from S line and 330 ft. from E line of E half SE, Sec. 4, Blk. 1, A.C.H.&B. Sur. ... Skidded 60 ft. north; drlg. 2,205 ft.
Pure Oil Co.'s No. 8 Davis, 330 ft. from NW of NE, Sec. 86, Blk. 3, I.&G.N.R.R. Sur. ... Show oil lime 3,036 ft.; T.D. 3,254 ft.; swabbed 125 bbls. to d.d.
Prairie O. & G. Co.'s No. 2 Reynolds, 330 ft. each way from NW cor. SE, Sec. 61, Blk. 3, I.&G.N. Sur. ... Drlg. 2,330 ft.
Purple Sage Oil Co.'s No. 2 E. B. Johnson ... 2,000,000 ft. gas; 200 ft. oil 2,870 ft; shot with 510 qts. 2,775-2,-872 ft; 400 ft. oil; C.O. 2,875 ft.

Republic Prod. Co.'s No. 1 G. H. Saunders, 330 ft. each way from SW cor. E half NW cor. Sec. 4, Blk. 1, A.C.H.&B. Sur. ... Drlg. 2,641 ft.
Schwald et als' No. 1 fee, 330 ft. each way from NE cor. E half SW, Sec. 1, Blk. 1, A.C.H.&B. Sur. ... Fish. 2,300 ft.
Skelly Oil Co.'s No. 1 Saunders, 330 ft. from E line, 990 ft. from S line, SW Sec. 4, Blk. 1, A.C.H.&B. Sur. ... Drlg. 2,445 ft.
Skelly Oil Co.'s No. 2 Saunders, 231 ft. from S line, 1,-127 ft. from W line, SW, Sec. 4, Blk 1, A.C.H.&B. Sur. ... Drlg. 2,510 ft.
Skelly Oil Co.'s No. 3 Saunders, 330 ft. from N line and 990 ft. from W line, SW cor. Sec. 4, Blk. 1, A.C. H.&B. Sur. ... Drlg. 2,599 ft.
Skelly Oil Co.'s No. 4 Saunders, 330 ft. from N line and 990 ft. from E line, SW cor. Sec. 4, Blk. 1, A. C.H.&B. Sur. ... Stdznd. 2,588 ft.
St. Clair Oil Co.'s No. 1 Rowe, Sec. 32, Blk. R ... S.D. 2,150 ft.
St. Clair Oil Co.'s No. 1 L. S. Stockton, SE cor. Sec. 35, W. R. Lee Sur. ... Spudded and S.D.
Southern Pet. Exp. Co.'s No. 2 McConnell, 990 ft. from W line and 330 ft. from S line of NW, Sec. 174, Blk. 3, I.&G.N. Sur. ... Rig.
The Texas Co.'s No. 5 A. Chapman, 1,138 ft. from W and 330 ft. from S lines, SE Sec. 51, Blk. 25, H. &G.N. Sur. ... Cellar.
The Texas Co.'s No. 4 H. M. Davis, SE cor. NW, Sec. 86, Blk. 3, I.&G.N. Sur. ... Drlg. 3,185 ft.
The Texas Co.'s No. 5 Davis, 330 ft. S and W of NE cor. NW, Sec. 86, Blk. 3, I.&G.N. Sur. ... Drlg. 1,640 ft.
The Texas Co.'s No. 8 Saunders, 895 ft. N and 2,060 ft. E of SW cor. Sec. 3, B.&B. Sur. ... Drlg. 2,275 ft.
The Texas Co.'s No. 9 Saunders, 330 ft. S and 3,016 ft. E of NW cor. Sec. 1, Eustis Sur. ... Drlg. 2,000 ft.
The Texas Co.'s No. 7 Saunders 990 ft. from S line and 330 ft. from W line of W½ SE cor. Sec. 4, Blk. 1, A.C.H.&B. Sur. ... Drlg. 2,430 ft.
Travis et als' No. 1 J. S. Morse, SE NW SW, Sec. 58, Blk. 25, H.&G.N. Sur. ... 30,000,000 ft. gas 2,592-2,610 ft.; S.D. 2,705-10 ft.; running liner.
Wilcox Pampa Oil Co.'s No. 30 Wooley & Reynolds, NW SE NW, Sec. 61, Blk. 3 ... Drlg. 3,038 ft.; flowing 8 bbls. per hour.
Wilcox-Pampa Oil Co.'s No. 31 Worley Reynolds, 330 ft. N and E of SW cor. SE SW, Sec. 61, Blk. 3, I.&G.N. ... Drlg. 2,330 ft.
United Eight O. & T. Co.'s No. 1 E. B. Clay, SE cor. W½ SW, Sec. 177, Blk. B-2 ... Swabs 7½ bbls. per hour 3,251 ft.; placing lead plug to shut off water.

HALL COUNTY

Rio Bravo Oil Co.'s No. 1 Hughes est., 950 ft. from N line, 150 ft. from E line, Sec. 39, Blk. H, I. A. Stephens Sur. ... Set 6-in. 3,500 ft; S.R. 4,250 ft.

HOCKLEY COUNTY

World Oil Co.'s No. 1 Ellwood, 320 ft. from N and W lines, League 7, Wilbarger County school lands; elevation, 3,363 ft.; contract depth, 5,000 ft. ... S.D. 1,455 ft.

HARTLEY COUNTY

Amarillo Oil Co.'s No. 9 Lee Bivins "A," C NW, Sec. 6, Blk. 21 ... 15,000,000 ft. gas 3,300-35 ft; T.D. 3,601 ft; to deepen.

Canadian River Gas Co.'s No. 10 Burns-A, 660 ft. N and 660 ft. E, Sec. 18, Blk. 2, G.&M. Sur. ... Location.

HUTCHINSON COUNTY

Antelope Creek Oil Co.'s No. 3 Sanford, 330 ft. from N line and 330 ft. from W line of E½ S 160 acres of Sec. 82, Blk. 46, H.&T.C. Sur. ... Drlg. 1,650 ft.
R. G. Barnum et als' No. 1 Garland Sanford, Sec. 78, Blk. 46 ... S.O. 3,920 ft; S.D. 3,030 ft.
Dunnigan et als' No. 1 C. W. Hugenbyhl, 330 ft. from S line and 330 ft. from E line, N½, Sec. 4, Blk. T, W.N.G.R.R. Sur. ... Drlg. 780 ft.

Oil Operators Trust Co. and Marland's No. 2 J. M. Stanford B, Sec. 82, Blk. 46, H.&T.C. Sur. ... S.D. 3,039 ft.
Phillips Pet. Co.'s No. 4 Johnson Bros.-Florence, 330 ft N and E of SW cor. E½, Mary Whitely Sur. ... Spud.
Phillips Pet. Co.'s No. 3 Johnson-Pulaski, 330 ft. N and W of SE cor. W½, Mary Whitely Sur. ... Drlg. 375 ft.
Phillips Pet. Co.'s No. 5 Johnson-Barnum, 990 ft. N and 330 ft. W SE cor. E 80 acres of S 160 acres of N 400 acres, Sec. 64, Blk. 46, H.&T.C.R.R. Sur. ... Rig.
Phillips Pet. Co.'s No. 1 Sanford-Garford, 330 ft. N and E of SW cor. N 40 acres of E 80 acres of S 160 acres of S 320 acres, Sec. 77, Blk. 46, H.&T.C.R.R. Sur. ... Drlg. 2,920 ft.
Phillips Pet. Co.'s No. 3 Sanford-Garland, 330 ft. N and E of SW cor. Sec. 77, Blk. 46, H.&T.C. Sur. ... Rig.
Phillips Pet. Co.'s No. 15 Whittenburg, Sec. 63, Blk. 46, H.&T.C. Sur. ... Building rig.
Phillips Pet. Co.'s No. 16 Whittenburg, Sec. 63, Blk. 46, H.&T.C. ... Rig.
Premier O. & G. Co.'s No. 1 L. E. Borton, C NE NW NW, Sec. 32, Blk. Y, A.&B. Sur. ... Rigged up and S.D.
Timms et als' No. 2 Garner, 990 ft. S and 330 ft. E of NW cor. J. W. Proctor Sur. ... Drlg. 2,850 ft.
Timms' et als' No. 1 Moore, 330 ft. N and E of SW cor. S 40 ac. of NW, Sec. 21, Blk. M-21, T.C.R.R. Sur. ... Rig.
Wendell et als' No. 1 Johnson Bros., Sec. 1, Blk. X03 ... Set 10-in. csg. 2,035 ft; S.D.

KING COUNTY

The Texas Co.'s No. 1 J. H. Johnson ... S.D. 4,300 ft.

LAMB COUNTY

Dan Freel et al's No. 1 Ellwood, CWL, Sec. 9, Blk. T, T. A. Thompson Sur. ... Spudded and S.D.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles ranch ... Small show oil 1,133-40 ft; S.D. 4,000 ft.

MOORE COUNTY

Barnsdall Oil Corp.'s No. 1 L. R. Hagy, NW cor. of Thomas Ross Sur. ... 20,000,000 ft. gas 3,205 ft.; 3,234 ft.; 900 ft. oil 3,226-34; swabbed twice in one day made 52 bbls.

Canadian Gas Co.'s No. 1 Kilgore-A, 2,716 ft. S and 2,695 ft. W of NE cor. Sec. 1, Eustis Sur. ... Rig.
Devonian Oil Co.'s No. 1 J. T. Sneed, Jr., 2,235 ft. from E and 330 ft. from S lines, S 160 ac., N 320 ac., of Matilda Robinson Sur. ... Fish. 2,980 ft.
Dixie Creek Oil Co.'s No. 1-A Sneed, Jr., 330 ft. N and W of SE cor. E½, Sec. 65, Blk. 3, G.M. Sur. ... T.D. 3,197 ft. to run 6-in. csg.
Dixie Creek Oil Co.'s No. 4-A Sneed, Jr., 330 ft. S and W of NE cor. E½, Sec. 65, Blk. 3 ... 10,000,000 ft. gas 2,835-55; drlg. 3,265 ft.
Fritch O. & G. Co.'s No. 1 Lee Burns, C NE 40 ac. of N 160 ac., Sec. 4, Geo. Mahan Sur. ... Spudded and S.D.
McMan O. & G. Co.'s No. 1 Sneed, 2,260 ft. S and 330 ft. W of NW cor. J. W. Proctor Sur., but in Matilda Robinson Sur. ... Lime pay 3,097-3,103 ft.; swabbing 22 bbls. per hour; T. 3,110 ft.

Phillips Pet. Co.'s No. 1 Burnett, 330 ft. each way from NE cor. NE, Sec. 192, Blk. 3-T, T.&N.O. Sur. ... Rig.
Phillips Pet. Co.'s No. 2 J. T. Sneed, 660 ft. S and 330 ft. W of NW cor. J. H. Proctor Sur. ... Shot with 80 qts. 3,176-3,207; T.D. 3,212 ft.; swabbed 87 bbls. in three days.

Phillips Pet. Co.'s No. 3 Sneed (James), 600 ft. S and 330 ft. W of NW cor. J. W. Proctor Sur., but in Matilda Robinson Sur. ... Drlg. 3,050 ft.
Skelly Oil Co.'s No. 5 Armstrong & Byrd, 2,260 ft. S and 330 ft. E of NW cor. J. W. Proctor Sur. ... T.D. 3,168 ft; P.B. to 3,15[illegible] and swabbed 485 bbls. first hours; preparing to shoot w 10 qts. 3,145-52 feet.

MOTLEY COUNTY

Explin Co.'s No. 1 Tillson ... S.D. 750 ft. for repairs.
Explin. Co.'s No. 2 Matador Land & Cattle Co., C SW, Sec. 37, John Gibson Sur. ... C.O. 4,700 ft.

ROBERTS COUNTY

Big Bend Oil Co.'s No. 1 Ledrick, Sec. 7, Blk. 5-A ... Formerly abd. at 5,240 ft; show 36 grav. oil 5,285-91; show oil brown sand 5,71[illegible] ft; S.D. 5,750 ft.

WHEELER COUNTY

Angus et als' No. 2 Morgan, C E½ NW NE, Sec. 93, Blk. 17, H.&G.N. Sur. ... S.D. 1,175 ft. for pipe.
Arnold Oil Co. et als' No. 1 Ritchey, 420 ft. from E and 460 ft. from S lines of NW cor., Sec. 5, Blk. 24, H.&G.N. Sur. ... Rig.
Byrens et als' No. 1 Johnson, SW cor. NE, Sec. 38, Blk. A-5, H.&G.N. Sur. ... S.D. 2,800 ft.
Chapman & Morgan's No. 1 Otis Hatcher, NW cor. SW SE, Sec. 63, Blk. 17, H.&G.N. Sur. ... S.D. 715 ft.
Clark et als' No. 1 Close, 330 ft. from N line and 660 ft. from E line of S½ SE NE, Sec. 82, Blk. 23, H.&G.N. Sur. ... Rig.
Fain McGaha and Humble's No. 1 Noel, 330 ft. each way from NE cor. S½ SE, Sec. 54, Blk. 24, H.&G. N. Sur. ... Spud.
Hartell et als' No. 1 Burcham, C NW SE, Sec. 91, Blk. 17, H.&G.N. Sur. ... Drlg. 1,155 ft.
Johnson & Co.'s No. 1 Purcell, 430 ft. from N line and 570 ft. from W line NE, Sec. 50, Blk. 17, H.&G.N. Sur. ... Spud.
Lone Star Co.'s No. 1 Hicks, C SW NE, Sec. 52, Blk. 17, H.&G.N. Sur. ... Cellar.
Lone Star Gas Co.'s No. 3 Jones, C NW NE, Sec. 1, Blk 25, H.&G.N. Sur. ... Location.
Lone Star Co.'s No. 1 Shelton, C NE SE, Sec. 22, Blk. 24, H.&G.N. Sur. ... Drlg. 620 ft.
Lone Star Gas Co.'s No. 2 Stuckey, C W½ SE SW, Sec. 92, Blk. 17, H.&G.N. Sur. ... S.D. 1,860 ft.
Martin & Dubous' No. 1 Close, 330 ft. S and 660 ft. W of NE cor. NE SE, Sec. 82, Blk. 23, H.&G.N. Sur. ... Rig.
L. W. Rook's No. 1 M. Nelson, C NW NE, Sec. 5, Blk. 24, H.&G.N. Sur. ... C.O. 1,950 ft.
J. D. Whittington et als' No. 3 Williams-Laycock, 330 ft. N and E of SW cor. SW, Sec. 9, Blk. 27, H.&G. N.R.R. Sur. ... Location.
L. W. Rook's No. 2 A. Smock, C SW SE, Sec. 5, Blk. 24, H.&G.N. Sur. ... Rig.
Wisch Kamper's No. 1 Parsons, C NW NW, Sec. 53, Blk. 23, H.&G.N. Sur. ... Drlg. 1,560 ft.
Wisch Kamper's No. 2 Wisch-Kamper, 175 ft. N and 164 ft. E of SW cor. NE SW, Sec. 86, Blk. 23, H. &G.N. Sur. ... Drlg. 485 ft.
Upham Gas Co.'s No. 1 Trostle, Sec. 130, Blk. 23, H. &G.N. Sur. ... Drlg. 1,775 ft.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 40)

FISHER COUNTY

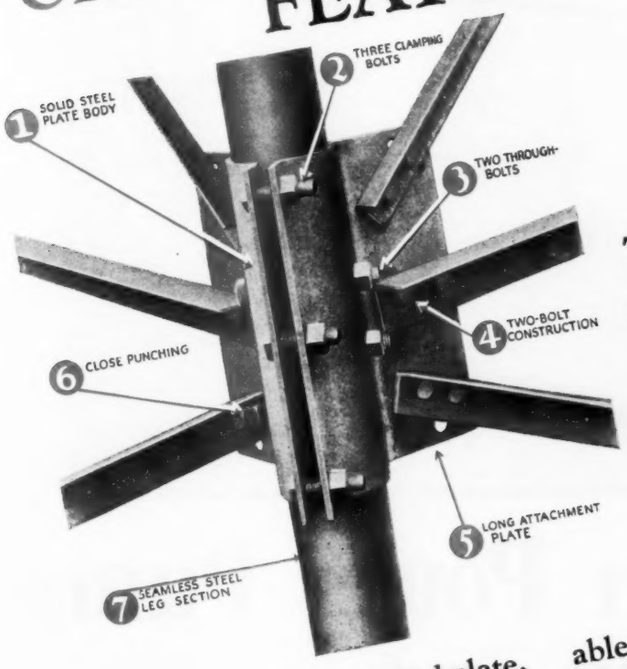
Bickerstaff et al's No. 1 McWhirter, 2,640 ft. E and 150 ft. N of SW cor. of Sec. 295, Blk. 2, H.&T.C. Sur. ... Shut down 1,820 ft.
Cranfill & Reynolds' No. 1 Brown, 330 ft. S and E of NW cor. Sec. 4, W. E. Richardson Sur. ... Spudding.
Dunnegan Bros.' No. 1 T. Henry, 330 ft. N and E of SE cor. Sec. 21, George W. Burdett Sur. No. 322, but in Sec. 4, Robert Hibbitt Sur. No. 331 ... Shut down 1,275 ft.

CULBERSON COUNTY

Deep Rock Oil Co.'s No. 2 Seay, 200 ft. N and 250 ft. E of CSL Sec. 20, Blk. 59, T.&P. Sur. ... Shut down 1,000 ft.
W. S. Hillyer's No. 1 McGregor, C NW Sec. 14, Blk. 81 ... Shut down 385 ft.
Hickey & Silver's No. 1 C. O. Finley, 660 ft. N and 1,980 ft. W Sec. 20, Blk. 82 ... Hole full water; small oil show 1,331 ft.; pipe set 1,418 ft.; total depth 1,660 ft.

Scott & Dittman's No. 1 Miller, 1,160 ft. N and 2,480 ft. E Sec. 1, Blk. 97, Public School Land ... Rainbow 1,056 ft.; 300 ft. sulphur water 1,725 ft.; shut down for casing 1,767 ft.

A Moore CHAMPION DERRICK FEATURE



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GARDNER-DENVER

Hucony Gas Co.'s No. 1 D. F. Maberry, 1,078 ft. S and 188 ft. W of NE cor. Elijah Bell Survey No. 327 ..... Hole full salt water 2,725 ft.; shut down 2,840 ft.

Thompson et al's No. 1 Newman, 1,320 ft. N and 660 ft. W of SE cor. of SW Sec. 44, Blk. 1, H.&T.B. Sur .... Fishing 1,240 ft.

GAINES COUNTY

Pure Oil Co.'s No. 1 A. A. Williamson, 1,650 ft. S and 330 ft. W of NE cor. Sec. 110, Blk. H, D.&W.R.R. .... Drlg. 1,934 ft., shale.

GLASSCOCK COUNTY

Chas. Daniels et al's No. 1 Meek, 2,310 ft. W and 1,650 ft. N of SE cor. Sec. 7, Blk. 34, Twp. 3s, T.&P. Sur... Location.

Gibson & Johnson's No. 1 Mann, C NW Sec. 6, Blk. 33, T.&P. Sur. ..... Drlg. 500 ft.

R. R. Penn's No. 1 Hughes-Johnson, C NW Sec. 45, Blk. 30, W.&N.W. Sur. ..... Drlg. 378 ft.

Marland Prod. Co. et al's No. 7-A Settles, 2,310 ft. S and W of NE cor. Sec. 158, Blk. 29, W.&N.W. Sur. ... Location.

Meriweather Oil Co.'s No. 2 McDowell, 1,492 ft. N and 150 ft. E of SE Sec. 35, Blk. 34, Twp. 2s, T.&P. Sur.... Drlg. 1,725 ft.

Sprague Oil Co.'s No. 4 Roberts, 1,650 ft. S and 330 ft. E of NW cor. Sec. 156, Blk. 29 ..... Shut down 1,949 ft.

World Oil Co.'s No. 1-C McDowell, 1,650 ft. S and 2,310 ft. W of NE cor. Sec. 31, Blk. 34 ..... Rigging up.

White Eagle Oil & Ref. Co.'s No. 1 Dunbar, C of NW Sec. 46, Blk. 34, Twp. 4s, T.&P.R.R. Sur. ..... Drlg. 290 ft.

HOWARD COUNTY

Amerada Pet. Corp. and Rycade Oil Corp.'s No. 2 Dora Roberts, 990 ft. S and 2,240 ft. W of NE cor. Sec. 137, Blk. 29 ..... Shut down 2,479 ft.

Amerada Pet. Corp. and Rycade Oil Corp.'s No. 3 Dora Roberts, 990 ft. S and W of NE cor. Sec. 137, Blk. 29 ..... Drlg. 2,640 ft.

Amerada Pet. Corp. and Rycade Oil Corp.'s No. 4 Dora Roberts, 330 ft. N and 2,310 ft. E of SW cor. Sec. 128, Blk. 29, W.&N.W. Sur. ..... Drlg. 2,710 ft.

Amerada Pet. Corp. and Rycade Oil Corp.'s No. 5 Dora Roberts, 330 ft. N and 2,310 ft. W of SE cor. Sec. 128, Blk. 29 ..... Drlg. 2,400 ft.

Amerada Pet. Corp. and Rycade Oil Corp.'s No. 6 Dora Roberts, 330 ft. N and 990 ft. W of SE cor. Sec. 128, Blk. 29, W.&N.W. Sur. ..... Drlg. 2,561 ft.

California's Co.'s No. 1 Settles, 2,310 ft. N and W of SE Sec. 158, Blk. 28, W.&N.W. Sur. ..... Rigging up.

Cosden & Co.'s No. 2 Dora Roberts-D, 1,650 ft. S and 990 ft. W of NE cor. Sec. 157, Blk. 29, W.&N.W. Sur... Shut down 2,965 ft.

F. H. E. Oil Co. et al's No. 7-B Dora Roberts, 330 ft. S and E of NW Sec. 137, Blk. 29 ..... Fishing 2,600 ft.

F. H. E. Oil Co.'s No. 8-B Dora Roberts, 2,310 ft. S and E of NW cor. Sec. 137, Blk. 29, W.&N.W. Sur. ..... Shut down 2,931 ft.

F.H.E. Oil Co.'s No. 10-B Dora Roberts, 330 ft. S and 310 ft. E of NW cor. Sec. 137, Blk. 29 ..... Underreaming 2,934 ft.

F. H. E. Oil Co.'s No. 11-B Dora Roberts, 1,700 ft. S and 2,310 ft. E of NW cor. Sec. 137, Blk. 29, W.&N.W. Sur. ..... Shut down 250 ft.

F. H. E. Oil Co.'s No. 5-D Dora Roberts, 2,310 ft. S and 1,650 ft. E of NW cor. Sec. 136, Blk. 29 ..... Set 6-in. casing 2,930 ft.; shut down.

Green Oil Co. et al's No. 1 J. W. Furrh, C SW cor. Sec. 11, Blk. 31 ..... Top lime 2,100 ft.; set 6-in. casing 2,865 ft.; 500 ft. sulphur water; Drlg. 3,040 ft.; hole full water.

Green et al's No. 1 Slaughter, C SW Sec. 32, Blk. 31, Twp. 3n, T.&P.R.R. Sur. ..... Location.

L. C. Harrison et al's No. 1 G. M. Podge Est., SE cor. Sec. 9, Blk. 30, Twp. 1s, T.&P. Sur. ..... Hole full salt water 1,475-1,505 ft.; top lime 1,825 ft.; show oil 2,972-74 ft.; hole full fluid 3,257 ft.; total depth 3,257 ft.

Henshaw Oil Corp.'s No. 2-A Settles, 1,884 ft. E and 330 ft. S of NW cor. Sec. 6, Blk. 32, Twp. 2s, T.&P. Sur... Drlg. 2,200 ft.

Howard County Oil Corp.'s No. 1 Kloh, 990 ft. S and 1,170 ft. E of NW cor. Sec. 5, Blk. 32, Twp. 2s, T.&P.R.R. Sur. ..... Drlg. 240 ft.

Laurel & Cosden's No. 8 Dora Roberts, 380 ft. W and 2,310 ft. N of SE cor. Sec. 136, Blk. 29 ..... Rig.

Louisiana Oil Corp.'s No. 2 Settles, 2,306 ft. E and 330 ft. S of NW cor. Sec. 6, Blk. 32, Twp. 2s, T.&P. Sur... Rigging up standard tools 2,000 ft.; drlg. 2,100 ft.

Magnolia Pet. Co.'s No. 12 Dora Roberts, 1,650 ft. N and 330 ft. S of SW cor. Sec. 136, Blk. 29, W.&N.W. Sur... Drlg. 1,845 ft.

Magnolia Pet. Co.'s No. 13 Dora Roberts, 2,440 ft. N and 1,650 ft. E of SW cor. Sec. 136, Blk. 29, W.&N.W. Sur. ..... Rigging up standard tools 2,927 ft.; shut down.

Magnolia Pet. Co.'s No. 16-D Dora Roberts, 990 ft. N and 1,650 ft. E of SW cor. Sec. 136, Blk. 29, W.&N.W. Sur. ..... Rigging up standard tools 2,440 ft.

Marland Prod. Co.'s No. 2-C Chalk, 330 ft. S and 1,650 ft. W of NE cor. Sec. 140, Blk. 29 ..... Location.

Marland Prod. Co.'s No. 4-E Chalk, 990 ft. N and 330 ft. E of SW cor. Sec. 124, Blk. 29, W.&N.W. Sur. ..... Cem. 6⅝-in. casing 1,746 ft.

Marland-Texon Prod. Co.'s No. 1 Eason, 2,638 ft. S and 2,513 ft. E of NW cor. Sec. 6, Blk. 32, Twp. 2s, T.&P Sur. ..... Shut down 2,129 ft.

Marland & Group One Co.'s No. 6-A Settles, 2,266.5 ft. S and 2,513.2 ft. E of NW cor. Sec. 6, Blk. 32, Twp. 2s, T.&P. Sur. ..... Set 8-in. casing 2,125 ft.; rigging up standard tools.

Marland Oil Co.'s No. 8-A Settles, 2,310 ft. N and E of SW cor. Sec. 158, Blk. 29, W.&N.W. ..... Location.

Phillips Pet. Co.'s No. 1 J. Thomas, 330 ft. N and W of SE cor. Sec. 13, Blk. 32, Twp. 1n, T.&P. Sur. ..... Topped lime 3,030 ft.; shut down 3,275 ft.

Pure Oil Co.'s No. 9 Chalk, 990 ft. N and W of SE cor. Sec. 136, Blk. 29, W.&N.W. Sur. ..... Location.

Shell Pet. Corp.'s No. 1 Settles, 990 ft. E and 330 ft. N of SW cor. Sec. 135, Blk. 29 ..... Drlg. 1,321 ft.

Schermerhorn Oil Co.'s No. 3 Dora Roberts, 1,650 ft. S and 990 ft. W of NE cor. Sec. 137, Blk. 29 ..... Drlg. 2,365 ft.

Schermerhorn Oil Co.'s No. 4 Dora Roberts, 990 ft. S and W of NE cor. Sec. 157, Blk. 29 ..... Drlg. 2,586 ft.

Sun Oil Co.'s No. 4 Settles, 330 ft. W and 1,650 ft. N of SE cor. Sec. 135, Blk. 29, W.&N.W. Sur. ..... Top pay 2,505 ft.; 1,000 ft. oil; swabbing at 2,552 ft.

Sun Oil Co.'s No. 6 Settles, 915 ft. N and 330 ft. W of SE cor. Sec. 135, Blk. 29, W.&N.W. Sur. ..... Bldg. rig.

Taylor-Link Oil Co.s' No. 2 Kloh-Rumsey, 1,884 ft. E and 150 ft. N of SW cor. Sec. 3, Blk. 32, Twp. 2-S, T.&P.R.R. Sur. ..... Drlg. 715 ft.

Texon O. & L. Co.'s No. 1 Quinn, 330 ft. N and W of SE cor. Sec. 11, Blk. 34, Twp. 1s ..... Straightening crooked hole 3,455 ft.; drlg. 3,670 ft.; hole full salt water.

Ward Oil Co.'s No. 3 Dora Roberts, 2,310 ft. N and E of SW cor. Sec. 137, Blk. 29 ..... Rigging up standard tools 1,950 ft.

Ward Oil Co.'s No. 4 Dora Roberts, 2,310 ft. N and E of SW cor. Sec. 137, Blk. 29, W.&N.W.R.R. Sur. .... Location.

Ward Oil Co.'s No. 5 Roberts, 1,650 ft. N and 330 ft. E of SW cor. Sec. 137, Blk. 29 ..... Drlg. 1,514 ft.

Witherspoon et al.'s No. 1 Kloh-Rumsey, 2,970 ft. E and 150 ft. N of SW cor. Sec. 3, Blk. 32, Twp. 2s, T.&P.R.R. Sur. ..... Derrick.

Witherspoon & Glasscock's No. 1 Settles, 330 ft. S and 2,970 ft. W Sec. 6, Blk. 32, T.&P. Sur. ..... Drlg. 1,260 ft.

HUDSPETH COUNTY

American Land Co.'s No. 1 Lockhart & Roseborough, C SE Sec. 5, School Blk. 21 ..... Total depth 260 ft.; rebuilding rig.

California Co.'s No. 1 University, 3,821 ft. N and 2,554 ft. E of SW cor. Sec. 19, Blk. E ..... Drlg. 352 ft.

Western States Oil Co.'s No. 1 Moore, C SE Sec. 16, Blk. 71, Twp. 6, T.&P. Sur. ..... Straightreaming 2,700 ft.; total depth 2,740 ft.; fishing pipe.

Western States Oil Co.'s No. 1 Gardner & Moseley, NE NW Sec. 12, Blk. 18 ..... Hole full water 2,945 ft.; underreaming 8¼-in. casing at 2,840 ft.; trying to get water shut off; shut down 3,140 ft.; trying to pull casing.

IRION COUNTY

Fuhrman Pet. Co.'s No. 1 J. O. Suggs, Lease 1, C SE Sec. 3,024, Blk. 24, H.&T.C. Sur. ..... Location.

Fuhrman Pet. Co.'s No. 1 J. D. Suggs, Lease 2, C SW Sec. 3,029, Blk. 24, H.&T.C. Sur. ..... Location.

Fuhrman Pet. Co.'s No. 1 J. D. Suggs, Lease 3, C SE Sec. 3,009, Blk. 24, H.&T.C. Sur. ..... Location.

Kimbrough & Flinchbaugh's No. 1 Tankersley, 160 ft. S and 200 ft. W of NE cor. Sec. 712, Ford Willig Sur.. Spudding.

Kimbrough & Tuel's No. 1 J. M. Nutt, 1,920 ft. S. 200 ft. E of NW cor. Sec. 5, Gonzales Co. School Land ... Set 6-in. casing 1,360 ft.; show oil and gas; shut down 1,400 ft.

Signal Oil Co.'s No. 1 Suggs, Sec. 9, Blk. H, T.C.R.R. Sur... Top salt 805 ft.; hole full sulphur water 1,865 ft.; shut down 3,155 ft.

F. E. Webb et al's No. 1 J. M. Nutt ..... Drlg. 2,510 ft.

Wesley West et al's No. 1 J. D. Suggs, SE NW SE Sec. 19, Blk. 7, H.&T.C. Sur. ..... Top pay 3,368 ft.; swabbed 25 bbls. oil and 40 bbls. water, 35.8 gravity oil; drlg. 4,280 ft.

C. J. Wrightsman's No. 1 Sawyer, 1,320 ft. from N and W lines Sec. 3,032, Blk. 24, H.&T.C. Sur. ..... Location.

JEFF DAVIS COUNTY

J. K. Hughes Dev. Co.'s No. 2 Means, 1,622 ft. N line, 600 ft. W line Sec. 345, H.&T.C. Sur. ..... Show gas 3,271 ft., black lime; slight show gas; drlg. 3,282 ft.

JONES COUNTY

Anna Belle Oil Co.'s No. 1 Bickley, 330 ft. S and E of NW cor. SE NE Sec. 50, Blk. 18, T.&P. Sur. ..... Rig.

Atkinson & Sandifer's No. 1 Hudspeth, 300 ft. S of CNL Sec. 22, Miles Sur. ..... Lime pay 2,578-85 ft.; 50 bbls. oil and 75 bbls. water first 11 hrs. and 23 bbls. oil and 70 bbls. water next 13 hrs.

W. G. Clark et al's No. 1 J. T. Thomas, 350 ft. S and 103 ft. W of extreme NE cor. Sec. 13, Blk. 19 ..... Shut down 2,587 ft.

E. P. Campbell et al's No. 2-C Herndon, 330 ft. N and E of SW cor. NW Sec. 6, M.E.P.&P. Sur. ..... Rig.

Cosden & Herbert Oil Co.'s No. 1 Bickley, 320 ft. N and 319 ft. E of SW cor. S half NW Sec. 50, Blk. 18, T.&P. Sur. ..... Rig.

Cosden, Herbert et al's No. 6 Bickley, 330 ft. S and 1,278 ft. W of NE cor. S half NW Sec. 50, Blk. 18, T.&P. Sur. ..... Drlg. 2,001 ft.

Mid-Sun Oil Corp.'s No. 1 George Hoehn, 660 ft. N and W of SE cor. SE 40 ac. of N 160 ac. of W 320 ac. of A. Crain Sur. A-152 ..... Shut down 1,100 ft.

McNeeley et al's No. 1 Roscoe Bland, 1,175 ft. N and 240 ft. W of SE cor. Subdivision 20, A-164, DeWitt Co. School Land ..... Spudded and shut down.

Phillips Pet. Co.'s No. 1 Campbell, 330 ft. S and E of NW cor. SE 41.5 ac. of S 166 ac. of N 180 ac., 4¼ of Sec. 15, Blk. 19, T.&P.R.R. Sur. ..... Drlg. 730 ft.

Phillips Pet. Corp.'s No. 5 J. C. Mason, 990 ft. S and 330 ft. W of NE cor. W half NE Sec. 18, Blk. 19, T.&P. Sur. ..... Drlg. 2,275 ft.

Phillips Pet. Co.'s No. 1 Winters, Sec. 19, Blk. 19, T.&P. Sur. ..... Drlg. 2,120 ft.

Richardson Bros.' No. 1 Mrs. M. A. Martin, C E 80 ac. N half Sec. 13, J. Welhl Sur. No. A-468 ..... Shut down 722 ft.

Roberts Oil Corp.'s No. 6 Grayson, 330 ft. S and W of NE cor. of lease, Sec. 13, Blk. 19, T.&P. Sur. ..... Pay 2,515-20 ft.; swabbed 65 bbls.

Roberts Oil Corp.'s No. 7 Grayson, 1,470 ft. N and 330 ft. W of SE cor. Sec. 13, Blk. 19, T.&P. Sur. ..... Drlg. 2,090 ft.

Sedwick O. & G. Co.'s No. 1 Routh, 1,250 ft. N. 2,500 ft. W SE cor. 299-ac. tract, Austin & Williams Sur. 355-A-7 ..... Rig.

Sinclair O. & G. Co.'s No. 2 Buckley, 975 ft. S. 320 ft. E of NW cor. N half NE cor. Sec. 50, Blk. 18, T.&P. R.R. Sur. ..... Shot with 25 qts. 2,505-13 ft.; Total depth 2,830 ft.; underreaming 2,720 ft.

W. G. Stough et al's No. 1 J. P. Willis, J. C. Patterson Sur. No. 2 ..... Shut down 1,740 ft.

The Texas Company's No. 3 Laura Carter, 330 ft. S and W of NW cor. Carter 173.5-acre tract, Sec. 13, Blk. 19, T.&P. Sur. ..... Drlg. 2,320 ft.

U. L. Tomberlin's No. 1 Horn, 1,980 ft. N and 660 ft. E of SW cor. of N 502 ac. of Penney Sur. A-283 .... Spudded and shut down.

Woods & Williams' No. 1 M. A. Parr, about 500 ft. S and E of NW cor. G. A. Kirkland Sur. A-507 ..... Run 6-in. casing 2,100 ft.; underreaming casing.

KNOX COUNTY

Deep Rock Oil Co.'s No. 1 Moore ..... Shut down 2,495 ft. for repairs

Deep Rock Oil Co.'s No. 1 Big Four, 1,276 ft. S and 2,500 ft. W of NE cor. Sec. 21, Blk. 4 ..... Shut down 4,516 ft.; hole full of water.

LOVING COUNTY

Lockhart & Co.'s No. 1 H. L. Lepp, 330 ft. each way from S cor. of Sec. 3, Blk. 2, W.&N.W. Sur. ..... Rig on ground.

LYNN COUNTY

Miller et al's No. 1 May, 500 ft. N of C of S L of Sec. 10, Blk. 7, E.L.R.R. Sur. ..... Location.

MENARD COUNTY

Carpenter & Robbins' No. 1 Kothman, NW cor. SW SW Sec. 22 ..... Shut down 600 ft.

Sorrels & Jackson's No. 1 F. Wilhelm, C NE Sec. 6, Blk. C, Brooks & Burleson Sur. ..... Fishing 315 ft.

MIDLAND COUNTY

Shoup et al's No. 1 Roy Parks, C NW Sec. 34, Blk. 41, Twp. 2s, T.&P. Sur. ..... Top salt 1,700 ft.; cem. 8¼-in. casing 2,770 ft.; show oil 3,330 ft.; shut down 4,980 ft.

MITCHELL COUNTY

California Co.'s No. 6 Foster, Lease 1, 990 ft. N and 2,310 ft. E of SW cor. Sec. 6, Blk. 29, Twp. 1s, T.&P. Sur. ..... Drlg. 1,397 ft.

E. P. Campbell et al's No. 1 Pond, 1,065 ft. W, 660 ft. N of SE cor. Sec. 79, Blk. 27, T.&P. Sur. ..... Rerun 12½-in. casing 730 ft.; drlg. 1,670 ft.

Hucony Gas Co.'s No. 1 C. Weichsel, 2,310 ft. N and 990 ft. E of SW cor. Sec. 78, Blk. 26, T.&P. Sur. ..... Top lime 1,342 ft.; drlg. 4,002 ft.; hole full salt water.

Simms Pet. Co.'s No. 1 Elwood, C SE of Sec. 29, Blk. 18, S.P.R.R. Sur. ..... Location.

Teas & Wheeler's No. 1 Radford, 1,320 ft. N and W of Sec. 1, Blk. 27, T.&P. Sur. ..... Drlg. 3,100 ft.

NOLAN COUNTY

L. G. Bradstreet et al's No. 1 Kuteman, C NW Sec. 95, Blk. X, T.&P. Sur. ..... Rig.

Herbert Oil Co.'s No. 1 Pepper, C N half Sec. 32, Blk. 22, T.&P. Sur. ..... Show gas 3,160 ft.; hole full sulphur water 3,190-3,202 ft.; drlg. 3,540 ft.

C. M. Root et al's No. 1 Simpson, 330 ft. S and W of NE cor. SE Sec. 33, Blk. 19, T.&P. Sur. ..... Run 12½-in. casing 525 ft.; drlg. 1,190 ft.

W. E. O. & R. Co.'s No. 1 Allyn, 660 ft. E and 1,720 ft. N of SW cor. Sec. 48, Blk. 20, T.&P. Sur. ..... Underreaming 10-in. casing 870 ft.; drlg. 2,060 ft.

PECOS COUNTY

Alexander & Lyle's No. 1 Myrtle Sellman, C SW SE Sec. 20, Blk. Z, T.S.Ry. Sur. ..... Top salt 814 ft.; top lime 1,602 ft.; 3,400,000 ft. gas from 1,611-26 ft.; spraying very little oil; sulphur water 1,652 ft.; shut down 1,655 ft.

George Anderson's No. 1 University, C Sec. 11, Blk. 17 ... Top salt 1,030 ft.; shut down 1,970 ft.; 3,000,000 ft. gas.

California Co.'s No. 1 Smith, Lease 4, 1010 ft. from N and E line Sec. 15, Blk. 194, G.C.&S.F. Sur. ..... Drlg. 642 ft.

M. C. Dibble & Hale's No. 1 Bonebrake, Sec. 115, Blk. 8, H.&G.W. Sur., elev. 2,555 ft. ..... Top lime 1,305 ft.; set 6-in. casing 1,610 ft.; shut down 2,004 ft.

Ditto Oil Co.'s No. 1 J. M. Montgomery, Sec. 104, Blk. 331, A-16,387 ..... Shut down 660 ft.

Mauch & Kroger's No. 1 Holmes, Sec. 5, Blk. 178, T.C. Sur. ..... Shut down 1,010 ft.

McCarty Oil Co.'s No. 1 Bennett, 960 ft. S and E of NW cor. Sec. 592, G.C.&S.F. Sur. ..... Drlg. 1,340 ft.

Mid-Kansas Oil & Gas Co.'s No. 12-C Yates, 811 ft. from N and 871 ft. from W lines Sec. 60, Blk. 1, I.&G.N. R.R. Sur. ..... Drlg. 30 ft.
Mid-Kansas O. & G. Co.'s No. 27-B Yates, 250 ft. N and 845 ft. E from NW cor. Sec. 60, Blk. I, I.&G.N.R.R. Sur. ..... Drlg. 275 ft.
Pecos Valley Oil Co.'s No. 2 Pecos Valley, 150 ft. NW of SE and 150 ft. NE of SW Sec. 34, Blk. 3, H.&T.C. ..... Location.
Phillips Pet. Co.'s No. 1 J. L. Nutt, 2,310 ft. from W and 330 ft. from S lines Sec. 9, Blk. 125, T.&St. L. Sur. ..... Rigging up.
B. J. Spikes' No. 1 George Brown ..... Shut down 700 ft.
Schumaker et al's No. 1 Williams et al, 330 ft. N of middle of S line Sec. 1, Blk. 117, G.C.&S.F. ..... Shut down 492 ft.
Southern C. O. P. Co.'s No. 1 Scharbauer Cattle Co., SW cor. Sec. 21, Blk. 134, T.&S.L. Sur. ..... Show gas 1,455-60 ft.; water 3,175 ft.; fishing 3,380 ft.
Talbot & Ditman's No. 1 Unsicker, 1,320 ft. from E and 660 ft. from S lines, Sec. 25, Blk. 10, H.&G.N. ..... Straightreaming 708 ft.
Transcontinental Oil Co.'s No. 1 University, NE NW SW Sec. 18, Blk. 18 ..... Top lime 1,155 ft.; fishing 4,130 ft.
Trees Oil Co.'s No. 1 Trees, 330 ft. from N and E L of Sec. 62, Blk. 8 ..... Location.
Yates Ranch Dev. Co.'s No. 1 Yates-C, Lot 51, Sec. 70, Blk. 1, H.&G.N.R.R. Sur. ..... Drlg. 1,225 ft.
World Oil Co.'s No. 1 Kloh, Sec. 47, Blk. 45, Twp. S, T.P.R.R. Sur., elev. 2,810 ft. ..... Shut down 3,105 ft.

PRESIDIO COUNTY

Eastland Oil Co.'s No. 1 Smith, C Sec. 17, Certificate 463, or Blk. 351, G.C.&S.F.R.R. ..... Spudded and shut down.
Phillips Pet. Co., Empire G. & F. Co., Delmar Oil Co. and C. E. Miller's No. 1 Tootle Est., C NE Sec. 75, Blk. 3, D.&P.R.R. Sur. ..... Fishing 690 ft.
L. C. Brite's No. 1 Lee, Sec. 50, Blk. 12, G.H.&S.A. Sur., center of section. ..... Shut down 4,152 ft.; show oil 4,130 ft.; set 6-in. casing 4,152 ft.; shut down.

REAGAN COUNTY

The California Co.'s No. 5 University, 2,310 ft. from N and E lines Sec. 16, Blk. 7, University Land ..... Bldg. rig.
Texon O. & L. Co.'s No. 1-B University Group 1 ..... Top pay 6,250 ft.; hole full of oil; well made two small heads; oil sand 8,482 ft.; total depth 8,525 ft.; flowing 1,025 bbls. oil 13,000,000 ft. gas daily.

REEVES COUNTY

D. P. Davis et al's No. 1 H. C. McCart, 300 ft. S and 200 ft. W of NE cor. S half NW Sec. 26, Blk. C-18 ..... Shut down 25 ft.
Exploration Co.'s No. 1 A. A. Kinney, 1,500 ft. W of NE cor. Sec. 26, Blk. C-18, Public School Land, elev. 2,847 ft. ..... Total depth 2,900 ft.; shut down.
Dr. Kitsis et al's No. 1 Kloh & Rumsey, 330 ft. N and W of SE cor. Sec. 5, Blk. 54, Twp. 5, T.&P. Sur. ..... Total depth 880 ft.
David R. Thompson's No. 1 A. A. Eddins ..... Swedging casing 5,658 ft.; pulling 5-in. casing.
Robert Penn et al's No. 1 Bowles, 2,310 ft. SW of NE cor. Sec. 36, Blk. 50, Twp. 8, T.&P.R.R. Sur. ..... Ready to spud.
Lee O. White et al's No. 1 Kloh-Rumsey, 660 ft. S and E of NW cor. Sec. 5, Blk. 51, Twp. 10, T.&P. Sur. ..... Moving in material.

RUNNELS COUNTY

Boyce et al's No. 1 E. O. Lange, 2,300 ft. S and 6,900 ft. W of NE cor. Austin & Williams Sur. No. 262 ..... Shut down 450 ft.
Foster et al's No. 1 Currie, 1,866 ft. SE of NW line, 335 ft. SW of NE L. Gray Carroll Sur. ..... Moving in material.
R. D. Hamilton et al's No. 1 A. Spill, 1,320 ft. S and W of NE cor. A. Spill 891 acres, out of Thomas R. Webb Sur. 358 ..... Shut down 100 ft.
McLean et al's No. 1 G. W. Clayton, 150 ft. N line, 270 ft. from W line Sec. 135, E.T.R.R. ..... Shut down 1,185 ft.
Nourse & Tilton's No. 1 R. A. Stokes, 200 ft. S, 600 ft. E of NW cor. G.C.&S.F. Sur. No. 2 ..... Underreaming 1,995 ft.
R. B. Summers et al's No. 1 J. W. Reese, M. J. Parramore Sur. 26 ..... Shut down 1,650 ft.
Union Oil Co. of Nevada's No. 1 W. E. Allen, 1,000 ft. N and W of SE cor. Sec. 1, H.E.&W.T. Sur. ..... Drlg. 1,700 ft.
Vacuum Oil Co.'s No. 1 Brevard, 2,150 ft. N and 302 ft. E of SW cor. Lot 21, D. Diaz Sur. No. 532 ..... Drlg. 1,920 ft.

SCHLEICHER COUNTY

J. F. Long and O. C. Long's No. 1 W. H. Williams, NE cor. Sec. 28, H.E.&W.T.R.R. Sur. ..... Shut down 275 ft.

SCURRY COUNTY

I. B. Mims et al's No. 1 J. J. Koonsman, Sec. 216, Blk. 2, H.&T.C. Sur. ..... Spudded and shut down.
G. E. Dieckman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. ..... Shut down 1,100 ft.

STERLING COUNTY

F. & G. Oil Co.'s No. 1 W. L. Foster, C SE Sec. 20, Blk. 12, S.P.R.R. Sur. ..... Show oil 1,296-98 ft. and 1,356-58 ft.; shut down 1,658 ft.

STONEWALL COUNTY

Sun Oil Co.'s No. 1 Reynor, 346 ft. S and W NE cor. Sec. 20, Blk. B, H.&T.C. ..... Shut down 3,390 ft. (corrected) for orders.

SUTTON COUNTY

Phillips Pet. Co.'s No. 1 A. G. Holman, 2,310 ft. S and 330 ft. W NE cor. Sec. 25, C.C.S.D.&N.G.R.R. Sur. ..... Fishing 5,770 ft.
Southern C. O. P. Co.'s No. 1 Allison, 2,310 ft. S and 330 ft. W of NE Sec. 44, Blk. K, G.H.&S.A. Sur. ..... Moving in material.

TAYLOR COUNTY

Burnham et al's No. 1 A.M.Y.X. ..... Shut down 1,640 ft.
Grisham-Hunter Corp.'s No. 1 Campbell, 330 ft. S and E of NW cor. SW Sec. 65, Blk. 19, T.&P. Sur. ..... Location.
Hurley Oil Co.'s No. 1 Mrs. A. R. Payne, 330 ft. N and E of SW cor. E 80 acres of NW Sec. 52, Blk. 19 ..... Hole full water 2,145-62 ft.; shut down 2,600 ft.
Mid-Continent Oil & Gas Co.'s No. 1 Taylor, 990 ft. W. 215 ft. N SE cor. 100-ac. tract, Sec. 18, Guadalupe School Land Sur. ..... Drlg. 845 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW Sec. 155, Blk. D, M.-K.-T.R.R. Sur. ..... Spudded and shut down.
Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Blk. D-7, E.L.&R.R. Sur. ..... Shut down 1,749 ft.
Mrs. J. B. McPhee's No. 1 Sam Belt, C Sec. 78, Blk. D-7, E.L.&R.R. Sur. ..... Location.
Milham Exploration Co.'s No. 1 Bassett, Sec. 76, Blk. Y, W. E. Robertson Sur. ..... Cem. 6⅝-in. casing 3,986 ft.; cem. cave 4,430 ft.
Woodley & Jones' No. 1 Pankenham, C SE NW Sec. 43, Blk. B-2, C.C.S.D.&N.G.R.R. Sur. ..... Shut down 150 ft.

TERRY COUNTY

Kingsland O. & P. Co.'s No. 1 Brownfield, C NW SW SW Sec. 7, Blk. 1-A, E.L.R.R. Sur. ..... Drlg. 4,640 ft.

TOM GREEN COUNTY

Collins et al's No. 1 Jones, CSL Sec. 646, Shaffer Sur. ..... Shut down 1,800 ft.
Fitzgerald & Taliaferro's No. 1 Bennett, C SW Sec. 1,628, E. H. Ringer ..... Shut down 1,920 ft.
F. P. Green et al's No. 1 fee, 575 ft. from N and 1,450 ft. from W lines Sec. 165, District 11, S.P.R.R. Co. Sur. ..... Shut down 1,066 ft.; rigging up new machinery.
McLaughlin & Ridge's No. 1 R. Q. Holder, 3,140 ft. N and 80 ft. W SE cor. J. P. Parker Sur. (3,000-ft. test) ..... Show gas 1,757-59 ft.; shut down 3,005 ft.; hole full water 2,986 ft.
Tulsa Oil Co.'s No. 1 Adams, C SW Sec. 163, Blk. 11, S.P.R.R. Sur. ..... Shut down 1,050 ft.

UPTON COUNTY

Champlin Oil & Ref. Co.'s No. 4 J. F. Lane, 990 ft. from S, 330 ft. from W line of SE Sec. 2, G.C.&S.F. Sur. ..... Top pay 1,940 ft.; total depth 1,979 ft.; pumping 40 bbls. oil and 470 bbls. water.
Humble Oil & Ref. Co.'s No. 10 Ricker, 2,310 ft. from NE line and 3,280 ft. from NW line, Sec. 5, Mary Denton Sur. ..... Drlg. 650 ft.
Texas Pacific C. & O. Co.'s No. 12 Lane-A, 1,650 ft. N and 2,310 ft. E of SW cor. Sec. 5, G.C.&S.F. Sur. ..... Drlg. 970 ft.

YOAKUM COUNTY

Weekley Oil Corp.'s No. 1 Knight, C NW Sec. 791, Blk. D, John Gibson Sur. ..... Location.

VAL VERDE COUNTY

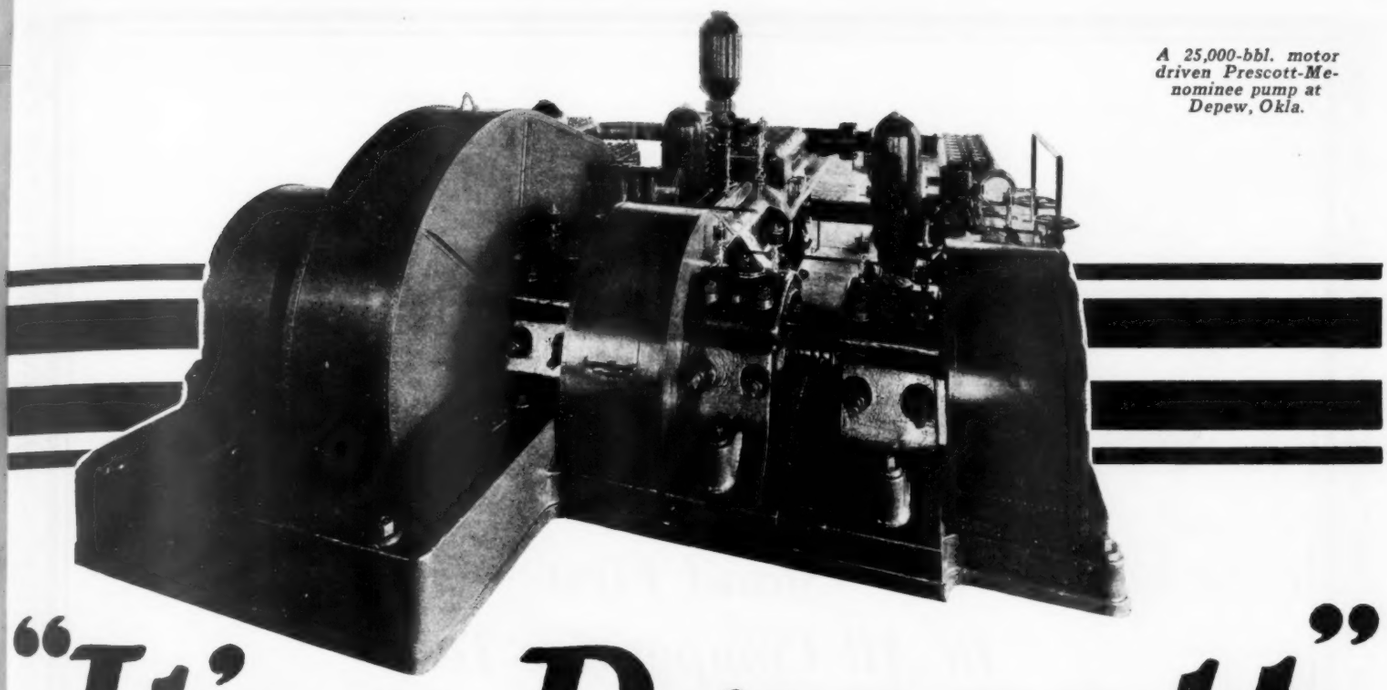
Independent Operators' No. 1 Whitehead, SE SE Sec. 30, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. ..... Drlg. 4,670 ft.
O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. ..... Gas sand 2,491-2,520 ft., tes 125,750 ft. gas; reset 8-in. 2,[illegible] ft.; shut down 4,210 ft.
Producers Oil Co. et al's No. 1 Everett Bros., 2,310 ft. S and 330 ft. E of NW cor. Sec. 40, Blk. DB, C.C.S.D.&R.G.N.G. Sur. ..... Fishing 1,575 ft.
Dyar Bros. et al's No. 1 Wilson, 6,830 ft. N NE cor. Sec. 1, T.&P. Sur., thence 1,680 ft. E Sec. 115, Blk. E, G.C.&S.F. Sur. ..... Show oil and gas 1,055 ft.; dr 2,410 ft.
Valvert Oil Corp.'s No. 1 Bassett, C NE Sur. 47, Blk. Y ..... Set 15½-in. casing 767 ft.; set in. casing 1,510 ft.; drlg. 1, ft.

WARD COUNTY

E. B. Lovelace et al's No. 1 Redman, 1,980 ft. NE of SW line and 1,980 ft. SE of NW line, Sec. 162 Blk. 34, H.&T.C.R.R. ..... Spudding and shut down.
Prairie O. & G. Co.'s No. 1 Sealy Est., 1,320 ft. S and W Sec. 95, Blk. A, G.M.M.B.&A. Sur. ..... Top salt 1,073 ft.; $5,000,000 ft. 2,526 ft.; gas decreased to 000,000 ft. at 2,637 ft.; hole f sulphur water 3,460 ft.; 5,000, ft. gas 2,526 ft.; shut down 505 ft.
Rector Oil Co.'s No. 1 Johnson, 1,150 ft. NW, 5,610 ft. NE Sec. 10, Blk. 32, H.&T.C. ..... Top salt 745 ft.; 2,000 ft. water in hole 2,133,35 ft.; depth 2,501 ft.; straightreami
Shipley et al's No. 1 Hazlett, 2,310 ft. NE and 2,310 ft. SE Sec. 17, Blk. 5, H.&T.C. ..... Top salt 727 ft.; sand pay 2, 81 ft.; averaged 115 to 120 b daily.
Talbot, Dittman & Atlantic O. P. Co.'s No. 1 Dorr, 1,320 ft. from SE line and 660 ft. from SW line of Sec. 9, Block 5, H.&T.C.R.R. Sur. ..... 3 bbls. water per hr. 910 ft.; 10-in. casing 770 ft.; drlg. 1, ft., anhydrite.

WINKLER COUNTY

Anderson et al's No. 1 Hendricks, NW NE SE Sec. 3, Blk. B-12 ..... Top lime 2,740 ft.; total de 2,793 ft.; set 6-in. casing 2 ft.; drlg. 3,107 ft.; salt water 102 ft.
Amerada Pet. Corp.'s No. 2 Daugherty, SW cor. SE Sec. 3, Blk. 74 ..... Cem. 6-in. casing 2,657 ft.; cor 3,090 ft.
Amerada Pet. Corp.'s No. 3 Daugherty, NW cor. NE SE Sec. 3, Blk. 74 ..... Fishing bailer 2,612 ft.
V. T. Bolin et al's No. 2 Brown, 2,000 ft. S and W of NE cor. Sec. 4, Blk. B-5, Public School Land ..... Shut down 210 ft. water.
Barnsdall Oil Corp.'s No. 1 Tobe Morton, 330 ft. N and E of SW cor. Sec. 26, Blk. B-12 ..... Drlg. 3,110 ft.; oil show 3,070
Barnsdall Oil Corp.'s No. 2 Tobe Morton, 1,650 ft. N and 330 ft. E of SW cor. Sec. 26, Blk. B-12 ..... Set 12½-in. casing 547 ft.; sh down 1,094 ft.
Barnsdall Oil Corp.'s No. 3 Tobe Morton, 990 ft. N and 330 ft. E of SW cor. Sec. 26, Blk. B-12 ..... Cellar.
Culberson Bros.' No. 1 Hendricks, 1,650 ft. N and W of SE cor. Sec. 40, Blk. B-5, School Land ..... Top lime 2,270 ft.; cem. 8-in. ca ing 2,272 ft.; gas show 2,431 f fishing 2,878 ft.
Empire Gas & Fuel Co.'s No. 2 Daugherty, 330 ft. N and 2,310 ft. E of SW Sec. 3, Blk. 74 ..... Top lime 2,690 ft.; coring 2, ft.; 15,000,000 ft. gas 3,090 ft.
Empire Gas & Fuel Co.'s No. 3 Daugherty, 330 ft. N and 990 ft. E of SW cor. Sec. 3, Blk. 74 ..... Top lime 2,774 ft.; cem. 9-in. ca ing 2,781 ft.; total depth 2, ft.; rig burned.
Empire Gas & Fuel Co.'s No. 1-B Daugherty, 2,310 ft. S and 990 ft. W of NE cor. Sec. 3, Blk. 74 ..... Top lime 2,823 ft.; shut do 2,830 ft.
Gulf Prod. Co.'s No. 3 Cowden, 1,310 ft. N, 330 ft. E of SW of their 240-ac. tract, Sec. 3, Blk. B-12 ..... Location.
Gulf Prod. Co.'s No. 2 O'Brien, NW cor. Sec. 31, Blk. F ..... Cem. 8¼-in. casing 2,072 ft.; dr 2,768 ft.; top lime 2,723 ft.
Gulf Prod. Co.'s No. 3 O'Brien, Sec. 31, Blk. F ..... Set 10-in. casing 2,150 ft.; dr 2,790 ft.; top lime 2,700 ft.; sho oil.
Humble Oil & Ref. Co.'s No. 3 Hendrick-C Lease No. 2, 1,320 ft. S and 330 ft. E of NW cor. Sec. 10, Blk. B-12 ..... Location.
Independent O. & G. Co.'s No. 3 McCabe, 990 ft. S and 2,310 ft. W of NE cor. Sec. 36, Blk. B-5, School Land ..... Top salt 950 ft.; top lime 2, ft.; oil show 2,515 ft.; dr 3,135 ft.; 1,800 ft. oil in hole.
Magnolia Pet. Co.'s No. 1 Scarborough, 2,310 ft. S and 990 ft. E Sec. 1, Blk. C-22 ..... Top salt 1,122 ft. gas show 2, 45 ft.; total depth 2,887 f 1,500 ft. oil in hole.
Marland Oil Co.'s No. 1 Tobe Morton, SE cor. Sec. 27, Blk. B-12 ..... Cem. 12½-in. casing 492 ft.; t lime 2,652 ft.; cem. 8¼-in. ca ing 2,656 ft.; drlg. 2,800 ft.; show 2,780 ft.
Marland Oil Co.'s No. 2 Tobe Morton, 990 ft. N and 330 ft. W of SE cor. Sec. 27, Blk. B-12 ..... Rigging up rotary.
Morris & Henshaw's No. 1-B Hendricks, 1,650 ft. N and 990 ft. E of SW cor. Sec. 28, Blk. B-5, School Land ..... Rigging up standard tools.
Prairie Oil & Gas Co.'s No. 5 Cowden, 1,320 ft. N and 990 ft. E of SW cor. Sec. 3, Blk. B-12, School Land ..... Location.
Prairie O. & G. Co.'s No. 1 Leck, 330 ft. S and 2,310 ft. E of NW cor. Sec. 16, Blk. 74 ..... Cem. 12½-in. casing 240 ft.; dr 2,740 ft.
Prairie O. & G. Co.'s No. 2 Leck, 330 ft. S and 2,310 ft. W of NE cor. Sec. 16, Blk. 74 ..... Rig.
Prairie O. & G. Co.'s No. 1 Tobe Morton, 330 ft. N and 1,650 ft. W of SW cor. Sec. 27, Blk. B-12 ..... Cem. 12½-in. casing 500 ft.; ce 8¼-in. casing 2,770 ft.; riggin up standard tools.
Shell-The Texas Company's No. 6-A Cowden, 1,320 ft. S and 990 ft. E of NW cor. of Sec. 3, Blk. B-12, School Land ..... Top lime 2,536 ft.; cem. 8¼-i casing 2,538 ft.; shut down 2, ft.; flowing 120 bbls. daily.
Shell Pet. Co.'s No. 1 Daugherty, 2,310 ft. S and W of NE cor. Sec. 3, Blk. 74 ..... Cem. 12½-in. casing 528 ft.; to lime 2,684 ft.; set 9⅝-in. casi 2,689 ft.
Shell Pet. Co. et al's No. 2 Lum Daugherty, 2,310 ft. S and 1,650 ft. W of NE Sec. 3, Blk. 74 ..... Top lime 2,742 ft.; drlg. 2,831 f
Simms Oil Co. and Southwest O. P. Co.'s No. 1 George Sealey, 2,434 ft. S and 330 ft. W of NE cor. Sec. 50, Blk. F ..... Drlg. 2,020 ft., anhydrite.
Southern C. O. P. Co. and Westbrook Thompson's No. 4 Hendricks T-88-B, 330 ft. S and 1,320 ft. E NW cor. Sec. 4, Blk. B-12, Public School Land ..... Top lime 2,721 ft.; bailing casing
Southern C. O. P. Co.'s No. 3 Hendricks T-88-D, 1,320 ft. N and W of SE cor. Blk. B-12, Public School Land ..... Top lime 2,558 ft.; bailing casing
Southern C. O. P. Co. and Westbrook-Thompson's No. 1 Hendricks T-88-Q, 440 ft. N and 330 ft. E of SW cor. of N half Sec. 27, Blk. 26 ..... Cem. 8¼-in. casing 2,347 ft.; to pay 2,630 ft.; flowing 38 bbls hourly.
Southern C. O. P. Co. and Westbrook-Thompson's No. 3 Hendricks T-89-C, 2,310 ft. N and W of SE cor. Sec. 35, Blk. B-5 ..... Cem. 8¼-in. casing 3,290 ft.; rig ging up standard tools; dri 2,290 ft.
Southern Crude O. P. Co.'s Hendrick T-89-V, 1,320 ft. S and 330 ft. W of NE cor. Sec. 2, Blk. B-12, School Land ..... Location.
Texas Canadian Oil Co.'s No. 1 Kloh-Rumsey, 1,320 ft. N and E of SW cor. Sec. 35, Blk. 46, T.&P.R.R. Sur. ..... Location.
Warner-Quinlan Co.'s No. 1 Daugherty, 2,310 ft. S and E of NW cor. Sec. 3, Blk. 74, Public School Land ..... Drlg. 2,535 ft.



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JONE SUCKER RODS

OIL SHOW FOUND IN WILDCAT IN CEDAR CREEK TOWNSHIP, MICHIGAN

By Special Correspondent

MUSKEGON, Mich., Dec. 28.—A show of oil and gas was encountered in the Shifting Sand Oil Syndicate's No. 1 fee well, SW NW, Section 20-11-15, Cedar Creek Township. As the well is located between 5 and 6 miles northeast of the nearest production in the Muskegon Township Field, the discovery is one of the leading new developments in Western Michigan this week.

The top of the Traverse is reported to have been encountered at 1,810 feet and the first show of oil and gas at 1,817 feet. Drilling operations were suspended and will not be resumed until the first of the year. Casing is on the ground and a string will be run if there are indications that the well will develop into a commercial producer.

Two other wildcat wells in Muskegon County were believed to be nearing possible production. The most promising is Harper and Newman's No. 1 Cook, an old mineral well located in NE NE, Section 2-9-16, Fruitport Township. A good show of oil was encountered in this well in the Berea formation at about 1,-200 feet and it was cased and cemented at about 1,300 feet. It was drilling in with a control head on the casing at 1,-350 feet.

The other wildcat well which is nearing the upper Traverse formation is the Sun Oil Co.'s No. 1 Grelewicz, SE NE, Section 26-11-16, Dalton Township. It was drilling at 1,500 feet.

The Fink Development Co.'s No. 1 Nash, SW NW, Section 20-9-14, Ravenna Township, is still shut down with a broken rig and a hole full of water after getting a good show of oil in the upper Traverse formation at 1,880 feet.

Three other wildcat wells are drilling in Muskegon County in other than Muskegon and Laketon Townships. They are Cedar Creek Land Development Co.'s No. 1 Wittels, NE NE, Section 34-11-15, Cedar Creek Township, at 700 feet; Eureka Oil & Gas Co.'s No. 1 Jane Featherstone, NW SW, Section 35-11-16, Dalton Township, at 365 feet, and J. F. Carpenter and others' No. 1 Jens Jensen, SE NE, Section 2-11-15, Cedar Creek Township, at 250 feet.

The White River Oil Corp. has started spudding its No. 1 Montague Village, SW NW, Section 21-12-17, Montague Township.

L. C. Patterson has changed his first location and will now drill his No. 1 on the property of Felix Monette, SE NE, Section 13-12-15, Holton Township. The original location was on the Loretta farm owned by Alfred Anderson, SW SE, Section 12-12-15, Holton Township.

A new location was announced by the Cloverville Oil Co., organized here last week. The first well of the new company will be located on the property of Arthur Born, NE NE, Section 12-9-16, Fruitport Township.

Western Michigan

The two deepest wildcat wells in the territory immediately adjacent to Muskegon County, and the only two by the way which are near enough for production in any formation at the present time, have been shut down, one at about 2,400 feet and the other at about 1,920 feet. Paul Schulte's No. 1 Thomas Blanchard, NW SW, Section 30-10-10, Nelson Township, Kent County, has been shut down at about 2,400 feet and will be cased at this depth to stop caving of the hole.

The Lima Oil Corp.'s No. 1 Atwood well, SE SW, Section 6-11-13, Ashland Township, Newaygo County, has been shut down now for several weeks at about 1,920 feet awaiting the arrival of Frank L. Maire, of Lima, Ohio, president of the company. As Mr. Maire has returned to Lima for the holidays following an attack of influenza which kept him in bed at Holland, Mich., for several days last week, it is not expected that the Newaygo wildcat test will be drilled in before the New Year.

Four other wildcat tests are drilling in counties adjoining Muskegon County. Three are in Oceana County and one is on a new location in Kent County. The three in Oceana County are all drilling at less than 600 feet. They are the Sankey Oil & Gas Co.'s No. 1 Beem, NW SE, Section 22-14-15, Newfield Township; Edward DuVall and others' No. 2 Carrie Mears, SW NW, Section 31-15-18, Golden Township, and the Pennsylvania Oil & Gas Co.'s No. 1 Bert Snow, NW SE, Section 23-15-15, Leavitt Township.

The new location in Kent County upon which a test is drilling at about 300 feet is the Kenyon Oil Co.'s No. 1 Edward Gould, NW NW SW, Section 24-9-10, Courtland Township, Kent County. H. A. Dempsey and J. C. Dillon, who organized and are drilling under the name of the Buckeye Oil & Gas Co. in Laketon Township in the Muskegon Field are drilling the new Kent County well. Headquarters of the Kenyon Oil Co. are at Lakewood, Ohio.

The other Kent County well has made no progress since the last report. This is the Mid-Continent Development Co.'s No. 1 George Easley, NW NW, Section 19-6-11.

The Muskegon Oil Corp. and five associated companies are reaming their No. 1 Essenberg-Dreyer, SE SW, Section 13-5-16, Park Township, Ottawa County, to the bottom of the structure test hole at between 700 and 800 feet. This will be the first deep test in a block of 16,000 acres held under lease by the associated companies in Park and Holland Townships.

The same companies have started their No. 6 structure test on the Poppema farm, Section 12-5-16, Park Township, Ottawa County.

Oceana County Tests

The first of a series of structure test wells to be drilled in Oceana County by the Muskegon Oil Corp. and five associated companies has been started this week on the property of William Kinstner, SE SW, Section 17-13-17, Grant Township, it was announced by E. J. Bouwsma, chairman of the wildcat committee of the associated companies. Olie Riegler, Muskegon water well driller, has the contract for the first test in the county north of Muskegon County. It is located about 1 mile northwest of the village of Rothbury near the Mears school.

Companies which are associated in the drilling of this and possibly other test wells are the Muskegon Oil Corp., the Muskegon Development Co., the Citizens Petroleum Co., the Lake Shore Petroleum Co., the Joliet-Morris Development Co., and the Dixie Oil Co., subsidiary of the Standard Oil Co. of Indiana. The first five companies have been associated in the development of about 80 per cent of the acreage in the Muskegon Township Field and the Dixie company has a share in the program in return for the services of its geological division.

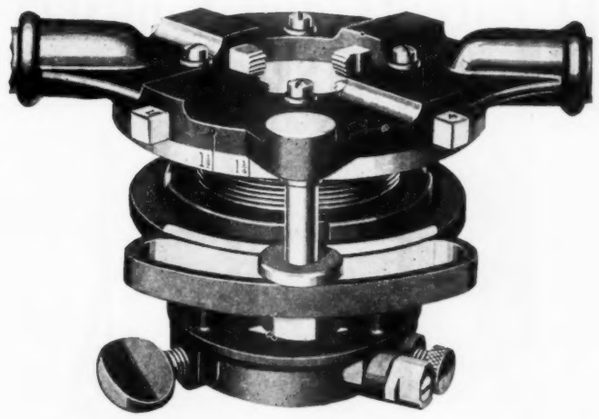
The drilling of additional test wells in this vicinity will depend to a great extent upon the success of the associated companies in blocking out a large amount of acreage on which they will hold the leases.

Midland County Producers

A new producer which may make a good producer when completed in the Dundee formation came in early this week on the McClintock property, SW SE, Section 12, Chippewa Township, Midland County. The well, which was drilled by Lemunyun and Weideman, contractors, for the South Bend Oil Syndicate, is located about 1 mile northwest of the three original wells with which the new Mt. Pleasant oil field has been opened by the Pure Oil Co.

While development of the new field has been comparatively slow as compared with the drilling of the acreage in the Muskegon Field, there are now four producing oil wells in the territory. Three wells are drilling and there are five strings of tools in the field at the present time.

One of the reasons for the gradual de-



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velopment of the field is due to the fact, no doubt, that the Pure Oil Co. owns the leases on 25,000 acres in this vicinity including practically a solid block. This company now has three strings of tools working and is expecting to extend its development program in the near future. By spring it is expected that there will be a fairly lively development of the field under way.

The new producer brought in this week got the oil at 3,550 feet and started flowing naturally without a shot. It made 40 bbls. over the first night and continued to increase until it is now making about 200 bbls. a day.

The oil obtained from these wells near Mt. Pleasant is of considerably higher gravity than anything from the Dundee formation at least in the Muskegon Field. The gravity of the Mt. Pleasant oil is 43 and over while that at Muskegon ranges from 36 to 38. A few Traverse wells produced higher gravity oil at about 42.3.

Another advantage of the Mt. Pleasant Field over that at Muskegon is that the bottom water is about 75 feet below the pay sands in the Dundee formation obviating the danger of drilling into the water which is an important consideration in the Muskegon Field.

Lemunyun and Weideman, contractors, are now drilling for S. W. Stork, of Saginaw, trustee, on the Coon lease, SE NE, Section 12, Chippewa Township, Midland County, at about 2,700 feet. This well should be completed within the next week or so.

The Pure Oil Co. is completing one of its first three wells and drilling two new ones. The one which is now being completed is No. 1 G. Lilley, SE NE, Section 18-14-2, Midland County. It is making about 100 bbls. a day from a depth of about 3,500 feet.

The Root well, which was the first to be drilled in this territory by the Pure Oil Co., is still making about 100 bbls. a day and No. 1 Raymer, SW SE, Section 18-14-2, Midland County, is reported to be good for about 200 bbls. a day. The latter is half a mile southwest of the Root well.

The Pure Oil Co.'s No. 1 Fred Sias, NE NW, Section 17-14-2, was forced to skid the rig and is now drilling again. It is located about half a mile northeast of the Root well.

The company is also now drilling its No. 2 Raymer, SW SE, Section 18-14-2, Midland County.

The Benedum & Trees Oil Co. of West Virginia is moving in a rig to a location near the village of Remus, Mecosta County.

Mason County

The Bowers Oil Corp.'s No. 2, SW SE, Section 9-17-15, Logan Township, Mason County, is drilling at 3,000 feet and expected to be coming in within a few days as the pay sands in the upper Niagara formation are encountered here at about 3,300 feet. This is the third test to be drilled in what may prove to be another oil and gas field in Michigan. The first two wells were principally gas wells, the output of which is now to be piped to Custer village, Scottville, Ludington and the intervening territory in Mason County.

The first well in this territory was drilled by the Logan Oil Co. and was known as its No. 1 Young, SE SW, Section 9-17-15, Logan Township, Mason County. It came in with about 500,000 feet of gas a day from the Niagara formation.

The second well to be completed was drilled as the Welsh-Taggart's No. 1, NW NW, Section 16-17-15, Logan Township, Mason County. It was later purchased with No. 1 Logan by C. A. Welsh, W. C. Taggart and C. M. Bowers, who organized the Bowers Oil Corp. to operate in Mason County.

The Pentwater city council this week granted the petition of the Central Michigan Pipe Line Co., also organized and controlled by the three men who formed the Bowers Oil Corp., to lay mains and sell gas from the Mason County wells.

The first pipe will be laid as soon as the weather permits. Work will probably be delayed until spring. Custer and Scottville will be the first to receive gas.

The Wittmer Oil & Gas Properties, of Pittsburgh, Pa., have leased about 3,0[illegible] acres of land in Lincoln and Wilc[illegible] Townships of Newaygo County and w[illegible] start drilling its first test in the ne[illegible] future, according to information receiv[illegible] here. The test is to be located near th[illegible] north edge of Section 4, Lincoln Town[illegible] ship, on property of the Fremont Canni[illegible] Co., which owns about 1,200 acres [illegible] the block under lease to the Pittsburg[illegible] interests.

Preparations also are being made f[illegible] the drilling of another wildcat we[illegible] northwest of Whitecloud which, howeve[illegible] will not be started until spring.

EASTERN FIELDS

(Continued from Page 62)

same company has started to drill [illegible] the Jesse Keyser farm. In Chapma[illegible] ville district, Logan County, the Troj[illegible] Oil & Gas Co. has started to drill [illegible] the Edward Carrott farm.

Starting New Work

In Sherman district, Calhoun Coun[illegible] W. H. Bickel has started to drill on t[illegible] G. C. Burrows and J. H. and J. [illegible] Hayhurst farms. In Lee district, G[illegible] frey L. Cabot has made a location [illegible] the L. H. Booer farm. In Liberty di[illegible] trict, Marshall County, Heinman, Re[illegible] & Co. have made a location on the [illegible] W. Ernest farm. In Clay district, We[illegible] zel County, the Valley Gas Co. is d[illegible] in the Big Injun sand on the Hen[illegible] Villers farm. In Church district, D. W[illegible] Null & Co. are due in the sand on t[illegible] W. G. Snodgrass farm. In Grant di[illegible] trict, Ritchie County, the Carnegie Na[illegible] ural Gas Co. is rigging up on the Lo[illegible] Weaver farm.

In Troy district, Gilmer County, [illegible] M. Bennett & Co. are due in the Gi[illegible] don sand on the Enos and Blanch M[illegible] er farm. In Ellsworth district, Ty[illegible] County, J. H. Pentz is rigging up on t[illegible] Timothy Smith farm. In Union distric[illegible] same county, the Brooks Oil & Gas C[illegible] has made a location on the Edwa[illegible] Brooks farm. In McElroy district, t[illegible] Hope Natural Gas Co. is placing m[illegible] material at a location on the M. V. [illegible] George farm. In Geary district, Ree[illegible] County, the United Fuel Gas Co. h[illegible] made locations on the G. E. Stump a[illegible] Grover McQuain farms. In Center di[illegible] trict, the Hope Natural Gas Co. is fi[illegible] ing for a string of tools on the M. [illegible] Kenney farm.

Southwest Pennsylvania

In Richhill Township, Greene Coun[illegible] the West Virginia Natural Gas Co. h[illegible] drilled deeper a test on the C. H. He[illegible] itt farm. It is a gasser in the Gori[illegible] sand. In Wayne Township, E. [illegible] Maple & Co. have a Fifth sand gas[illegible] on the E. W. Maple farm. In Per[illegible] Township, the Carnegie Natural Gas C[illegible] has a gasser in the Murphy sand at [illegible] feet, on the Grant Fox farm.

PAN AMERICAN PURCHASE[illegible] OIL MARKETING COMPAN[illegible]

NEW YORK, Dec. 28.—The Amer[illegible] can Oil Co., affiliated with the P[illegible] American Petroleum & Transport C[illegible] has taken over the Capitol Oil Co., In[illegible] of Richmond, Va. The Capitol Oil C[illegible] mains branches in Wakefield, Hopewe[illegible] Petersburg, Boydton, Mineral, Tow[illegible] Culpepper and Warrenton, Va., and [illegible] White Sulphur Springs, W. Va. The[illegible] will be continued as the Capitol Oil C[illegible] division of American Oil, with hea[illegible] quarters in Petersburg, Va.

American Oil Co. operates in Virgin[illegible] Pennsylvania, Maryland and other ea[illegible] ern States.

RYAN WITH MARLAND

P. J. Ryan, formerly of The Texa[illegible] Company, has been appointed manag[illegible] of the Chicago sales office of the Mar[illegible] land Refining Co. The appointment [illegible] effective January 1.

The Chicago office has charge of sa[illegible] for the entire Middle West. W. G. Jer[illegible] who was recently appointed vice pre[illegible] dent in charge of marketing for the Ma[illegible] land company will have his headquarte[illegible] at the Chicago offices which will be e[illegible] larged.

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After all the time and toil is summed up in a huge production investment, an unerringly accurate bookkeeper that will constantly record the story from the hole's top through each phase of gas handling, should be given employment.
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MEN KNOWN IN OILDOM

W. C. Thomas

With a record dating back to the opening of the Spindletop Field in 1901, perhaps no man has a greater practical drilling and production experience or wider knowledge of Gulf Coast development than W. C. Thomas, now general manager of production and drilling and assistant general manager of the southwestern division for the Vacuum Oil Company.

Mr. Thomas' experiences in the oil business started when he was only 13 years old so even with his 27-year record he is not an old man in years now. His first work was with the Burt Syndicate at Spindletop in laying lines to and from the Burt Refining Company's plant on the Neches River at Beaumont, a refinery which later was acquired by the Magnolia Petroleum Company.

After a year with this company he went to Saratoga with Brice & Bradley, whose interests later were acquired by the Guffey Petroleum Company, which in turn became the Gulf Production Company. He worked around the fields with the Guffey Company until 1905 when he obtained a place with the Producers Oil Company and stayed with that company until 1909 when he returned to the Guffey interests for another two years.

From 1911 to 1912, Mr. Thomas was in California drilling for the old Kern Trading & Oil Company, Southern Pacific subsidiary, at Coalinga, but he then went back to the Gulf Coast when he obtained a position as production and drilling superintendent for the Gulf Production Company. It was while he was in this position that the Goose Creek Field was opened, the discovery well being drilled under his direction.

In 1919, Mr. Thomas resigned from the Gulf company, accepting a position as manager of production for E. F. Simms and the Simms Oil Company. After two years in this capacity he went with the Humble Oil & Refining Company as assistant to the vice president, W. W. Fondren. He was with the Humble company four years when he was offered a position with the Vacuum Oil Company as general manager of production and drilling in April, 1925, and early this year he also was made assistant general manager of the southwestern division.

PERSONAL PARAGRAPHS

E. E. Schock, oil producer of Okmulgee, Okla., is in Tulsa after a trip over the Texas fields.

* * *

G. H. Beckers, connected with the Argentine Government Oilfields, is visiting the California oil fields.

O. P. (Happy) Yowell has been appointed general field superintendent for the Pacific Western Oil Company.

* * *

W. S. Farish, president of the Humble Oil & Refining Company, left Houston, Tex., this week for a brief visit to Dallas.

* * *

H. P. Taubman, president of the Taubman Supply Corporation of Tulsa, has returned from a three weeks' trip to the East.

* * *

H. H. Schwartz, of the Empire Oil Company, with Casper, Wyo., headquarters, was in Denver several days on law business.

* * *

R. Minnes from Borneo and A. Van der Heiden from Maracaibo, Venezuela, both of the Royal Dutch-Shell Company, are visiting in California.

* * *

Vance Rowe, chief of scouts for the Carter Oil Company in the Rocky Mountain region, was in Casper, Wyo., attending a meeting of oil scouts.

* * *

J. L. (Sandy) Hunter, who has followed the oil industry from Pennsylvania to Oklahoma and from Canada to Texas, is ill at his old home in Sharon, Pa.

* * *

R. R. Rosier, in charge of sales for the Signal Gasoline Company, Tulsa, is spending the holiday season in California where the general offices of the company are located.

* * *

T. C. Towl, Pittsburgh, Pa., superintendent of the Southwest Pennsylvania Pipe Line Company, and Mrs. Towl, spent the holiday with Mr. Towl's parents in New York City.

* * *

J. B. Arthur, manager of the Union Oil Company's fuel oil and asphalt department, has returned from a four months' absence spent in South America on company business.

* * *

F. W. Boley, vice president of the Max W. Boley organization, distributors of Barnsdall products in South America, is in Chicago conferring with officials of the Barnsdall corporation.

* * *

R. M. Dinges, foreign representative of the Continental Well Supply Company, has returned to the United States for a vacation after having spent nearly two years in South America for his company.

* * *

E. B. Reeser, president of the American Petroleum Institute, and also president of the Barnsdall Corporation, was a visitor in Fort Worth, Tex., this week.

* * *

George M. Maverick has been placed in charge of the Bayway Research Laboratories of the Standard Oil Development Company. Mr. Maverick was formerly assistant director of research at the Bayway laboratories.

* * *

R. E. Heithacker, assistant petroleum engineer of the United States Bureau of Mines, Bartlesville, Okla., has been assigned temporarily to the mining division of the bureau to assist that division in its core drilling work for potash salts in the vicinity of Carlsbad, N. Mex. Mr. Heithacker has previously been engaged in the oil recovery investigations of the petroleum division of the bureau.

* * *

Clarence E. Olmsted, vice president of The Texas Company of California, who has been acting as president of the company since the resignation of Jacques Vinmont, will continue to direct the destinies of the company indefinitely.

* * *

Mr. and Mrs. S. Hess, of Buffalo, Wyo., visited for a short time in Casper, Wyo., before leaving for the Atlantic Coast whence they will sail for a southern trip which will include visits in Mexico, South America and Central America.

* * *

Secondo Guasti, president of the Italian Vineyard Company, and son of the late Secondo Guasti, who developed the largest vineyard in the world near Ontario, Calif., has been elected a member of the board of directors of the Italo Petroleum Company.

G. C. Elliott, formerly traveling auditor with headquarters at Houston, Tex., has been appointed auditor of The Texas Company of California, succeeding R. J. Pagen, who resigned to become secretary-treasurer of the recently organized Pacific Western Oil Company.

* * *

C. O. Johns, director of research of the Standard Oil Development Company, now has his headquarters at the general offices of the company located at 26 Broadway, New York City. In addition to his duties as director he will act as vice chairman of the technical committee.

* * *

Henry M. Robinson, president of the Union Oil Associates and holding a similar office with the Los Angeles First National Trust & Savings Bank, has returned from the East. Mr. Robinson, it will be recalled, was a member of the Dawes Reparation Committee and served with distinction on that assignment.

* * *

J. J. Flanagan, of the Continental Oil Company, has returned to Casper, Wyo., after an extended trip to California. Mr. Flanagan has been general superintendent of the northern division of the Continental company in Wyoming. He was with The Texas Company for a number of years before going with the Continental company.

* * *

Charles R. Hetzler, superintendent of the Rocky Mountain Gas Company, subsidiary of the Ohio Oil Company, has recovered from an attack of influenza and is able to attend to business again. He was seriously ill while working on the Wyoming-Utah gas line in southern Wyoming and was taken to the Mayo clinic in Rochester, Minn., from where he has but recently returned.

* * *

C. R. McCollom, who formerly headed the Union Oil Company's geological department and subsequently became affiliated with the California office of the Prairie Oil & Gas Company, has resigned from the latter organization to accept the directorship of the geological and land department of the recently organized Pacific Western Oil Company.

* * *

C. A. Dally, general manager of the Reserve Natural Gas Company, of Shreveport, La., an Arkansas Natural Gas Corporation property, for the past 14 years, has resigned, effective January 1, to become general manager of the Penn-Ohio Gas Company, at Pittsburgh, Pa. He will be succeeded by W. H. Buckley, head of the Arkansas Natural Gas Corporation pipe line department, who will take over the duties of Mr. Dally's office.

* * *

The Superior Oil Corporation, Texas subsidiary of the Superior Oil Producing Company, has opened a San Angelo, Tex., office for direction of operations in West Texas and New Mexico, in charge of Nathan P. Isemberger, geologist, formerly with the Amerada Petroleum Corporation. Texas headquarters are to be established at Fort Worth in the W. T. Waggoner Building, and E. C. Edwards, San Angelo geologist and a director of the Exploration Company of Texas, will go to Fort Worth about January 15 to assume charge.

* * *

Clayton G. Dorn, of Bradford, Pa., treasurer of the Forest Oil Corporation, an ardent hunter and fisherman, has purchased 1,200 acres of partly cut-over forest land on Fuller Brook west of Bradford and will establish a private fish and game preserve. He will reforest the bare spots and stock the preserve with fish and a great variety of wild animal life. The acreage will be fenced in and will be in charge of experienced woodsmen. The Pennsylvania State Game Commission and Fish Commission will co-operate with Mr. Dorn.

* * *

Brig. Gen. Henry C. Smither, United States Army, chief co-ordinator under the director of national budget, has resigned to accept the position of assistant to Col. J. H. Graham, president of the Indian Refining Company, Lawrenceville, Ill. General Smither leaves the United States Army after a distinguished record of over 30 years' service. He was appointed to the position of chief co-ordinator in 1921 by Gen. Charles G. Dawes, who at that time was director of the budget. He will devote his entire time to the Indian company.

Timken Bearings Carry Motor Load plus Pump Load for Allis-Chalmers

The motor bearings are the pump bearings in the Allis-Chalmers Type "SSU" centrifugal pump unit. Allis-Chalmers, guided by experience, depends upon the extreme thrust-radial capacity of Timken Bearings to assure permanent centering of the armature and the pump impeller.

Inherent Timken capacity to carry all load from all directions without compromise, contributes importantly to the rigid, compact, clean design of this pumping unit—"not much larger than the motor alone"!

Throughout its longer life Timken friction-elimination and lubricating economy will contribute operating and maintenance savings.

Here is another of the thoroughly modern machines which fully demonstrate the rich possibilities that go with Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS*, and Timken electric steel.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

Natural Gas Developments

CONTINUAL CAMPAIGN WAGED AGAINST LEAKAGE FROM LINES

Natural gas companies are waging a continual campaign to reduce the leakage from their old lines. They are selecting certain districts, where they blank off the lines in sections as operating conditions permit, make the repairs that can be made economically, and then move on to another district. The effects of these tests and repairs are carefully analyzed with the over all "loss and unaccounted for" gas item, which should decrease as the lines are repaired and leakage eliminated. Other companies are confining their leakage campaigns to certain periods of the year, especially during the summer when there is more time for the work due to less stringent conditions of operation. In some sections of the country, lines are constructed in low regions so that they are covered with water at certain periods of the year. This affords a method of locating definitely leaks that are prevalent. The lines are patrolled during the wet season, the leaks located are marked by means of stakes, and later, when conditions are more favorable, the repairs are made to eliminate the leaks that were located.

Cost of Repairs

The cost of making repairs on newly constructed lines which will eliminate leakage is small when compared to the cost of old lines. Experience has shown definitely that one of the principal values of the leakage tests has been their application to newly constructed lines to prove that the lines were in good condition from a leakage standpoint before they were put into operation. Sources of leakage are located when it is known that they exist, and the leakage tests indicate whether they exist or not. The repair of these leaks eliminates troubles that might occur in later operation. Many of the gas companies concentrate particularly on their newly constructed lines to secure lines that are as near leak proof as possible before they are put into operation. The lines are so constructed that they can be blanked off with blind disks between pipe flanges in sections. In this way, accurate leakage can be made, sources of leakage determined, and repairs made to sections of the pipe line as they are completed by the construction crew. When the line is completed, it does not take long to complete the leakage survey and put the line into operation in excellent shape from a leakage standpoint.

Amount of Leakage

The amount of leakage to which a newly constructed line should reasonably be limited is much smaller than that which can be expected from an old line. When the leakage survey by the gas association and the Bureau of Mines was completed about three years ago, the data available at that time indicated that the reasonable leakage that should be expected from a screwed line was 300,000 cubic feet per year per mile of 3-inch line at a pressure of 100 pounds per square inch gauge; from a rubber coupled line, 200,000 cubic feet; and from a welded line, 100,000 cubic feet. Developments since that time by different companies have shown that it is possible to construct pipe lines with much lower leakage rates than was thought possible. With care in construction it is possible to limit the leakage to 50,000 cubic feet or less per mile of 3-inch line.

The cost of repairs to a newly constructed line has proven not to be prohibitive and it is believed that the money invested in such repairs is profitably invested; that is, the economic balance between the cost of repairs and the value of the gas saved by making these repairs generally is reached only when the leakage is reduced to a small amount. Also, a further advantage of locating the sources of leakage and repairing the leaks that are found while the construction of the line is in process is that the line can be covered, knowing that it is being put into operation in good condition. There is, as a result, more efficient operation and less danger of operating troubles during the later life of the line.

Precautions Successful

The possibility of obtaining rubber coupled joints through which only a small amount of gas can escape has been shown during the past few years. Realizing that much of the leakage from a rubber coupled line was through the small pores and channels between the pipe and the rubber connections, construction engineers began to use more care in this type of construction. The pores and channels were caused by roughness of the pipe

(Continued on Page 158)

MUSKEGON PIPE LINE APPROVED AS UTILITY

MUSKEGON, Mich., Dec. 29.—The Muskegon Pipe Line Co., organized here by Chatham, Ont., interests, has been granted permission to operate as a public utility furnishing gas to Greater Muskegon industries other than those supplied by the West Michigan Consumers Co. The company must obtain approval by the Muskegon city commission.

Natural gas has been turned on for heating boilers at the Central Paper Co., the first plant to receive gas through the new line. Two wells of the Paragon Oil Co. have been connected to the 8 and 10-inch line already laid.

The West Michigan Consumers Co., already serving a number of the larger industrial plants in Greater Muskegon, entered the only protest on the ground that there was no necessity for a second industrial pipe line company.

The Muskegon Pipe Line Co. has an authorized capitalization of $250,000. Officers are: President, R. L. Pattinson; vice president and treasurer, R. H. Owen; and secretary, J. V. Howard, all of Chatham, Ontario, where they are connected with the Central Development Co., one of the largest natural gas companies in Canada. It is estimated there is 10,000,000 feet of potential business.

The applications of 10 other operating companies to operate as public utilities in the Muskegon Field and elsewhere in the State also were approved by the Public Utilities Commission. They are: Benedum-Trees Oil Co., a West Virginia corporation, $100,000; Wolverine Mineral Development Co., $50,000; Citizens Petroleum Co., $100,000; Muskegon Oil Corp., $100,000; Harbor Oil Corp., $100,000; Inland Oil Co., $20,000; Reed Oil Co., $100,000; Wa-Je-Sel Oil Co., $20,000; Cedar Creek Gas & Oil Co., $50,000; and Paragon Oil Co., $50,000.

The case of the Central Pipe Line Co., which seeks to lay a pipe line from its gas wells in Mason County to Ludington, Manistee, Pentwater and other western Michigan cities and villages to supply gas for fuel and light, is pending.

The Continental Motors Corp. has purchased a minimum of 1,000,000 feet of gas a day from the Reed Oil Co.'s No. 1 Young well, SE NE Section 11-10-17, Laketon Township. Laying of a 4-inch

(Continued on Page 113)

SHOULD GAS COMPANIES CONTROL STANDARDS IN HEATING APPLIANCES

By George L. Scofield*
Dominion Natural Gas Co.

Gas companies are in business today for the sole purpose of selling gas. Gas is a product, however, which, in itself, is worthless. Before gas is of any value to a customer it must be put to work through a device. Hence, before gas is sold appliances must be sold.

Gas companies have for many years been merchandising in order to make a market for gas. Nonutility dealers have also been interested in appliances only to their direct financial interest by selling the class and type of appliance most easily sold, which, in some cases, has been the cheaper and more inferior type. At a recent meeting of pottery manufacturers, whose wares are handled almost exclusively by the plumbing trade, it was pointed out that the plumbing and heating industry had been selling too much profitless material and not enough high-grade merchandise. In their own particular field they had found that 78 per cent of the sale for their wares was of the cheaper grade, which was sold with little or no profit. In the plumber's endeavor to get business they had followed the lines of least resistance. This same condition not only applies to the plumbing and heating industry, but to hardware dealers who are also an outlet for gas appliances in our district.

Our interest in merchandising has been carried on with the idea of increasing revenues and maintaining present revenues, for we realize that our customers are entitled to the best possible service which can be secured only through properly designed appliances, which are as much a part of the gas plant as the distribution system. In as much as we do not control the appliance through which our service is rendered, as is the case with the telephone company, we must continue to sell quality and attractive merchandise, as the utmost in gas service is a requisite for our successful future. Newer uses for gas, such as refrigeration, house heating and automatic storage systems, must be promoted strenuously by ourselves along with the more popular selling appliances.

A gas company itself cannot market all the appliances which its territory can absorb, and consequently there will still remain nonutility dealers whom we should consider as associates and not as competitors. This feeling we should develop more and more each day, as through their efforts, with encouragement and education, we can continue in a larger way to benefit from their success.

First of all, we should handle only thoroughly tested appliances and encourage all dealers to do likewise. Unfortunately, there are still appliances being displayed and sold which will fail to render perfect gas service. No gas man should overlook the chance to correct this condition.

I know of no way that we can absolutely control the standard of appliances handled by other dealers in our territory. The dealer outlets for gas appliances other than ourselves, however, do certainly need our help. On the other hand they almost universally resent abrupt efforts by us to tell them what to sell and how, under the complaint that we are attempting to run their business. As I see it, the solution of the problem must come through our subtle, kindly co-operation and education. We must convey to them in the most graceful manner possible the conviction that, in the best interests of themselves and their customers, only thoroughly tested appliances should be sold.

In our advertising we can help them a great deal by making our advertisements more general and more institutional than particular. In other words, I think we should advertise the advantages of "gas cooking, gas water heating, gas house heating" rather than the distinctive features of one range, one water heater and one boiler or furnace.

By far the most valuable assistance we can render dealers is in the development and bringing forth of new appliances for new uses of gas. As we bring out each new device, we widen their market and consequently their opportunity for profits.

Leadership and education are still the best means of assisting those we want to help.

*Before Natural Gas and Petroleum Association of Canada.

PLANS BEING COMPLETED FOR NATURAL GAS MEN

Preparations are being completed for the annual meeting of the Southwest Division, Natural Gas Department, American Gas Association, January 14 and 15, at Shreveport, La. Sessions will be in the Washington Hotel. Many problems vital to the Southwest will be discussed.

Among the papers will be the following: "Economic Problems of High Pressure Transmission," by P. McDonald Biddison, consulting engineer of Monroe, La.; "Proper Casing and Tubing of Wells," by H. C. Otis, Arkansas Natural Gas Corp.; "Ideal Distribution Systems for Communities of 250 to 1,500 Meters" by Chester L. May, Community Natural Gas Co., Dallas; "Proper Classification of Accounts for Natural Gas Producing, Pipe Line and Distributing Companies," by Joe Zeppa, secretary Arkansas Natural Gas Corp.; "Development of Sales of Natural Gas and the Rates Necessary to Obtain the Business," by Harold Meade, New Orleans Public Service, Inc.; "Gas Company Advertising," by Miss Lois Upshaw, Dallas Gas Co.

Major Alexander Forward, managing director of the association, expects to attend to explain plans for work in the Southwest. Col. Oscar Fogg, president of the association, has aided the program committee.

ALLEGHENY GAS CORP. IN WEST VIRGINIA

The Allegheny Gas Corp. has been incorporated under the laws of the State of West Virginia to acquire and operate natural gas properties in West Virginia now supplying gas under contract to Huntington Development & Gas Co., United Fuel Gas Co., South Penn Oil Co., and Monickel Gas Co. Gas is also sold at wholesale to the Marmet Gas Co., Owens Bottle Co. and Libbey-Owens Sheet Glass Co. The corporation's subsidiary, the Upham Gas Co., operates an extensive producing and distributing property in Ohio supplying gas to large industrial consumers, including Pittsburgh Plate Glass Co., Lamb Glass Co., Hope Engineering & Supply Co., C. & G. Cooper Co. and others at Mount Vernon, Ohio, and to domestic consumers in that vicinity. The corporation and its subsidiary will own 147 gas wells and over 100 miles of pipe lines, including gathering lines, and will control through lease, or own in fee, the gas rights in approximately 37,000 acres of land in the gas-producing territories of Lincoln and Kanawha Counties, West Virginia, and Knox County, Ohio. The properties of the corporation and its subsidiary produced more than 2,000,000,000 feet of gas during 1927.

MAGNETOMETER STUDY OF STATE OF TEXAS

(Continued from Page 76)

linger, Menard and Junction. (See Plate 2.) Parallel to this appears to be a ridge extending from Hollis, Okla., through Crowell, Benjamin, Haskill, Albany, Brownwood, San Saba, Llano, Johnson and New Braunfels.

West Texas

Perhaps the most important area in the State at the present time is the so-called West Texas region, particularly Winkler County.

A.A.P.G., Vol. X, 1, 1927, Part 2:

"Structurally, West Texas is a large geosyncline. The eastern margin is defined by the Bend arch. The southern margin may be considered as a line extending from the Marathon Mountains to the central mineral region, or Llano uplift. The western side is limited by the mountains of southeastern New Mexico and the Delaware and Apache Mountains of Texas. The granite ridges of the Panhandle district, and the ancestral Rocky Mountains of New Mexico may be taken as the northern limit. The area within these limits appears to be one big geosyncline comprising a geologic province."

The magnetometer results for this area as shown in Plate 2 are based on a very few readings, but even so the general major features are brought out. For instance, there appears to be a magnetic ridge running northwest through Rankin, Monahans, Kermit and extending into New Mexico. A detailed study of this area checks this picture very closely.

It would appear from Plate 2 that this ridge is the south and western rim of a large regional magnetic basin the major axis of which runs also northwest and southeast through Garden City, Midland and Andrews.

It also appears that this magnetic basin at Andrews and Midland is a part of a large low area embracing Lamesa, Tahoka, Crosbyton and Guthrie, while the bounding rim would perhaps pass through Brownfield on the north, and on the east through Hollis, Okla., Crowell, Benjamin, Haskell, Albany, Sweetwater, Colorado, Sterling, Sherwood and Stiles.

A detailed study made in Andrews, Midland, Upton and Winkler Counties checks the presence of the large magnetic basin at Midland and Andrews.

The Panhandle

A very interesting article on the application of the magnetometer in detecting the presence of the buried granitic ridge of the Panhandle area was given by Carl C. Adams in The Oil and Gas Journal of February 16, 1928.

Plate 1 shows a magnetic syncline in the vicinity of Channing, also in the vicinity of Lefors, and the same facts are presented in Plate 2. A detailed study of the area in the vicinity of Dumas, Channing and Hartley brings out an additional low area just west of Dumas.

Conclusions

In a State covering such a vast area as Texas it would be almost impossible to give a detailed discussion of all the interesting magnetic anomalies.

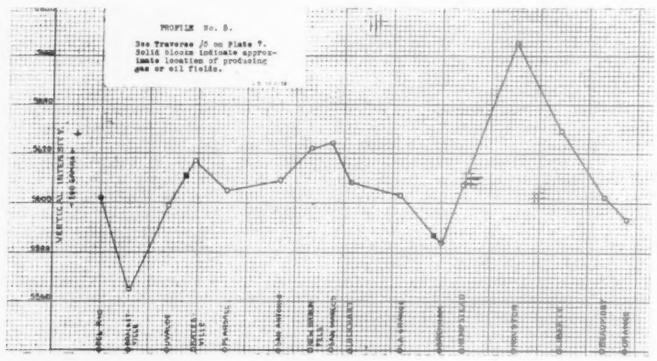
No attempt has been made to do this, the purpose of the article being merely to point out the possibilities of the magnetometer in certain regions. It is hoped, however, that the reader will pick out that particular area of interest to him and study the magnetic relations to the known geological structures about which he undoubtedly has considerable more information than the writer.

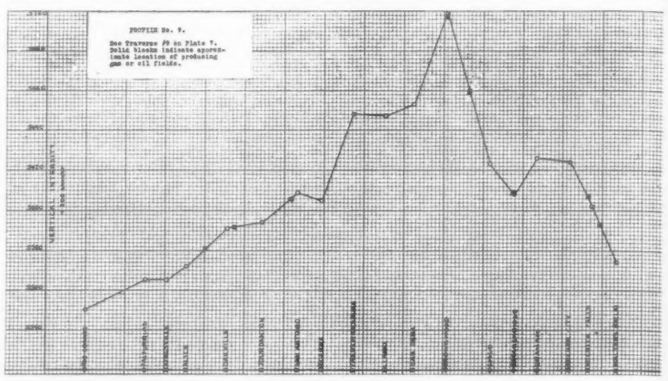
It has been briefly pointed out that certain large features as faults and ridges can be traced with the magnetometer. A discussion of the Salt Dome region has purposely been avoided because it is felt that the seismograph and torsion balance are best adapted for this particular work.

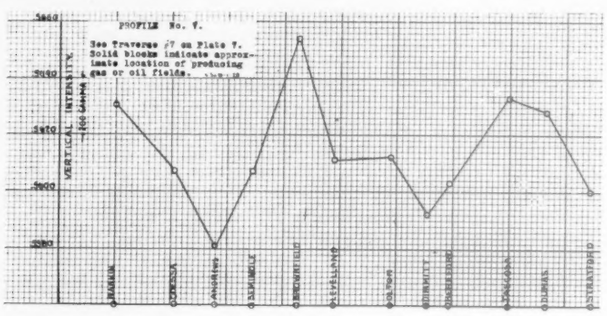
Attention is again called to the desirability in some instances of contouring a magnetic survey without applying any regional corrections.

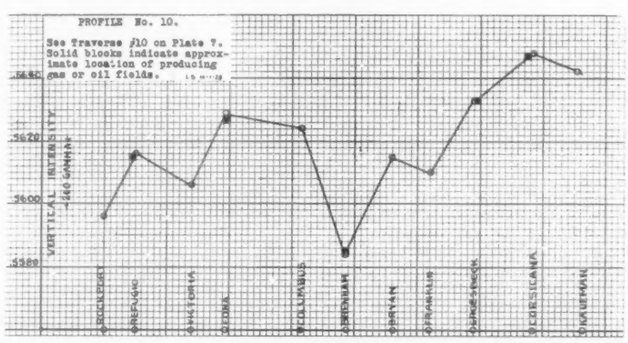
It has been shown by means of the 10 profiles accompanying this article that there is a marked relation between the occurrence of oil fields and places of unusual magnetic disturbances, and it is also pointed out that the magnetic lows are not to be disregarded.

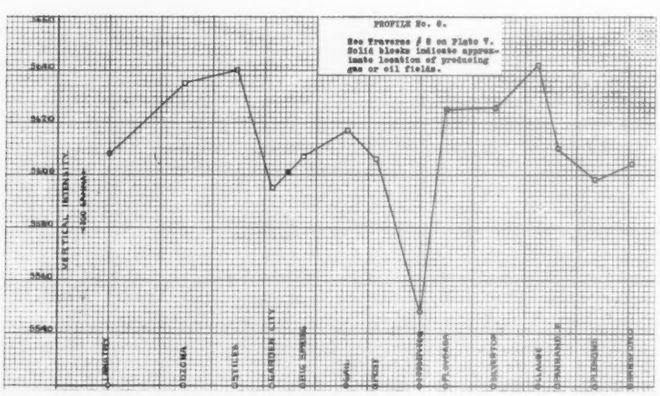
In conclusion, the reader's attention is again called to the favorable magnetic conditions at Brownfield, Terry County, and the ridge pointed out east of the Mexia fault; these areas, in addition to the other magnetic anticlines mentioned elsewhere in this article, are worthy of further detailed study.

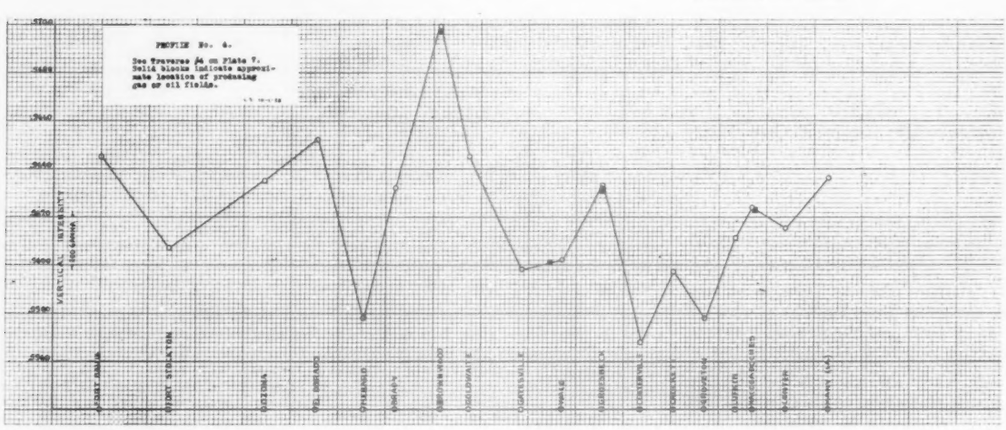

PROFILE No. 5.
See Traverse #5 on Plate 7.
Solid blocks indicate approximate location of producing gas or oil fields.
VERTICAL INTENSITY




PROFILE No. 7.
See Traverse #7 on Plate 7.
Solid blocks indicate approximate location of producing gas or oil fields.
VERTICAL INTENSITY


PROFILE No. 10.
See Traverse #10 on Plate 7.
Solid blocks indicate approximate location of producing gas or oil fields.
VERTICAL INTENSITY


PROFILE No. 8.
See Traverse # 8 on Plate 7.
Solid blocks indicate approximate location of producing gas or oil fields.
VERTICAL INTENSITY


PROFILE No. 4.
See Traverse #4 on Plate 7.
Solid blocks indicate approximate location of producing gas or oil fields.
VERTICAL INTENSITY

RUSSIANS ON OIL TOUR

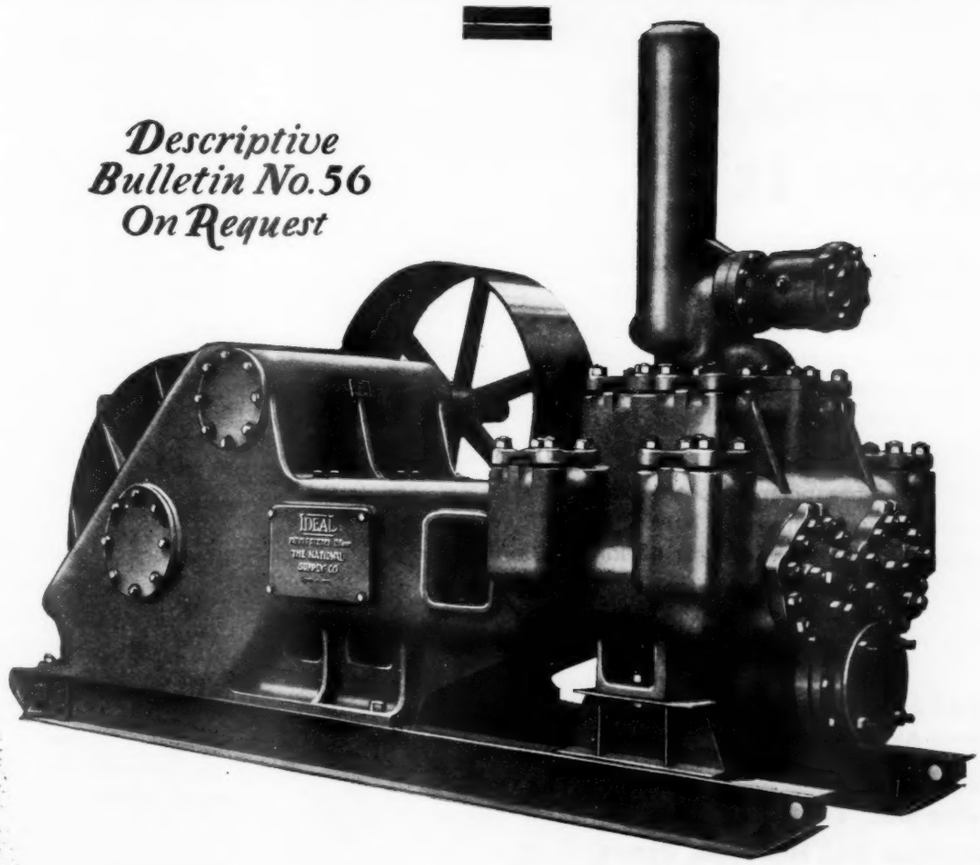
HOUSTON, Tex., Dec. 29.—W. Korobovkin, president of the Embaneft Oil Trust of the Russian Soviet government, and E. G. Meerson, chief engineer for the Dossor oil fields, one of the Embaneft properties, arrived here for a week's inspection of oil fields in this vicinity. After leaving here, the Russians plan to go to Dallas.

IDEAL

DUPLEX POWER SLUSH PUMP

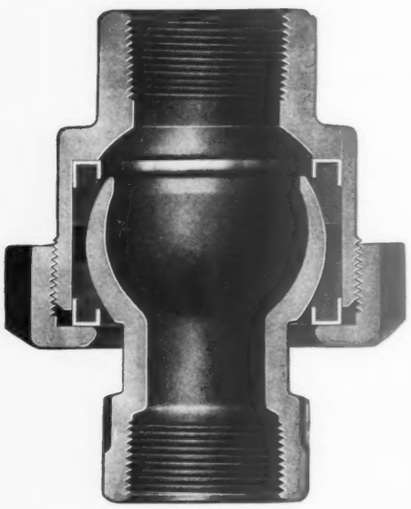
7¼ X 14 – TYPE "B"

Descriptive Bulletin No. 56 On Request



THE
NATIONAL SUPPLY
COMPANIES

Non-leaking flexibility with Barco Joints



Over 1,000,000 prove it

WHEREVER movement or vibration causes ordinary joints to wear and leak, Barco Flexible Joints are needed. On loading racks and loading docks, on steam lines for drilling rigs and refineries, on air compressor lines, and all similar locations, Barco Flexible Joints are doing good work. Over 1,000,000 of them are now in service.

The design of Barco Joints permits both angle and swivel movement by means of a ball joint. Double gaskets with long life insure years of non-leaking service.

Send for the latest bulletin on valves and joints.

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Vinson-Canter Co., Tulsa, Oklahoma

M. N. Dannenbaum Co., Houston, Texas

BARCO
Valves and Joints

O&GJ 1-3-Gray

KANSAS WILDCATS

(Continued from Page 44)

EDWARDS COUNTY

Amerada & Wilcox's No. 1 Teansil, C NW SW Sec. 32-25-19w ..... Drlg. 3,815 ft.
British American Oil Co.'s No. 1 McCarty, NE cor. NW Sec. 31-25-17w ..... Spudded and shut down

GEARY COUNTY

Pioneer Oil Co.'s No. 1 Chase, SE cor. SE Sec. 10-12-7 .... Dry and abandoned 3,600 ft.
Wright et al's No. 1 Younker, NW cor. NE Sec. 17-11-5 .. Shut down 1,200 ft.

GRAHAM COUNTY

Gulf Coast Oil Co.'s No. 1 Johnson, C S half Sec. 27-8-25w ..... Shut down 2,450 ft.

GREENWOOD COUNTY

L. Smith and other's No. 1 Herrman NE cor. SE NW Sec. 8-25-12 ..... Dry and abandoned 1,894 ft.
Hanley et al's No. 1 Peterson, NW cor. NE SE Sec. 4 26-13 ..... 1,000,000 ft. gas 1,528-31 ft.; completed.

HARPER COUNTY

Amerada Pet. Corp.'s No. 1 Mendiville, C E SE Sec. 24-34-6w ..... Cleaning out 5,353 ft.

HARVEY COUNTY

R. S. Austin's No. 1 Nieman, SW cor. SW Sec. 21-24-2 .... Drlg. 2,765 ft.
Mrs. Gay et al's No. 1 Grove, C NW NE NW Sec. 29-23-1w ..... Rig.
Helmerich & Payne's No. 1 Lindamond, C SW NE SW Sec. 2-22-1e ..... Rig.

JEFFERSON COUNTY

Wichiet Oil Co.'s No. 1 Simpson, NW cor. SW SW Sec. 19-10-17 ..... Rigged up and shut down.

JACKSON COUNTY

Garvin & Morton's No. 1 Lutes, SW cor. NW NW Sec. 27-7-15 ..... Shut down 940 ft.

LANE COUNTY

Blankenship Pet. Co.'s No. 1 Schaeffer, NE cor. NE Sec. 24-16-28w ..... Spudded and shut down.

LYON COUNTY

T. K. Simmon's No. 1 Milner, SE cor. NW Sec. 25-21-11 .. Dry and abandoned 2,095 ft.

MARSHALL COUNTY

Irwin et al's No. 1 Cooper, NE cor. NW Sec. 10-3-7 ..... Drlg. 620 ft.

MARION COUNTY

Empire Oil & Ref. Co.'s No. 1 Burhart, SE cor. NE NE Sec. 11-20-3 ..... Drlg. 2,241 ft.
J. E. Hauna's No. 1 Pankratz, NE cor. NE SW Sec. 13-20-3 ..... Rig.
Empire Oil & Ref. Co.'s No. 1 Jenson, SE cor. NW Sec. 26-22-5 ..... Drlg. 2,557 ft.
Courtney B. Davis' No. 1 Rampel, SE cor. NE SE Sec. 7-19-3 ..... Chat 2,424-58 ft., 1,500,000 ft. gas; 5 bbls. water and 8 bbls. oil.
A. E. Meyers' No. 1 Papp, SW cor. SW NE Sec. 10-18-2.. Spudded.
Raymond Gear's No. 1 Larson, NW cor. SW NW Sec. 18-21-4 ..... Dry and abandoned 2,720 ft.

MEADE COUNTY

Blackwell O. & G. Co.'s No. 1 Beyer, SE cor. NW SE Sec. 9-33-28w ..... 500,000 ft. gas and 2 bailers water total depth 4,356 ft.

MITCHELL COUNTY

Ben Gurley et al's No. 1 Crombil, C NE NE Sec. 32-9-7w ..... Drlg. 3,830 ft.

MORRIS COUNTY

Hugh Faulder's No. 1 Wendt, SW cor. SE SE Sec. 18-16-5 ..... Spudded.
Loomis & Anderson's No. 1 Young, NW cor. SE, Sec. 14-17-7 ..... Dry and abandoned 1,285 ft.
Skelton et al's No. 1 Iles, NW cor. NW Sec. 25-16-5 .... Rig.
O'Day et al's No. 1 Scott, NE cor. SW Sec. 6-16-6 ..... Rig.

McPHERSON COUNTY

Ted Washabaugh's No. 1 Vosshell, NE cor. NE Sec. 9-21-2w ..... Drlg. 1,945 ft.
Lariaux et al's No. 1 Martinson, NE cor. Sec. 9-19-3w ... Rig.
McPherson Gas Co.'s No. 1 Stein, SW cor. NE SW Sec. 17-18-1w ..... Drlg. 3,007 ft.
McPherson Gas Co.'s No. 1 Gustafson, C NE Sec. 9-17-2w ..... Shut down 3,437 ft.
W. C. Newman's No. 1 Diepenbrock, NW cor. NE Sec. 2-17-1w ..... Casing 3,320 ft.
McPherson Gas Co.'s No. 1 Wedell, C SW Sec. 12-20-2w ..... Drlg. 2,517 ft.
Vickers Pet. Co.'s No. 1 Wedel, C SW Sec. 12-20-2w ..... Rig.
Mid-Kansas Oil & Gas Co.'s No. 1 Yoder, C NW SW Sec. 8-20-4w ..... Drlg. 325 ft.
Marland Prod. Co.'s No. 1 Wilkering, C SW SW Sec. 9-21-1w ..... Spudded.

NESS COUNTY

Barnsdall Oil Co.'s No. 1 Lauk, C SW Sec. 35-18-21w .... Spudded.

OSAGE COUNTY

York State Oil Co.'s No. 1 Smith, SE cor. SW NW Sec. 18-18-15 ..... Dry and abandoned 2,115 ft.

OSBORNE COUNTY

T. C. Johnston's No. 1 Cooley, C NW NE Sec. 15-8-15w .. Dry and abandoned 3,607 ft.
L. D. Jarvis' No. 1 Jellison, SE cor. SE Sec. 13-10-15w .. Spudded and shut down.

OTTAWA COUNTY

Anderson et al's No. 1 Bank, NE cor. NW Sec. 28-10-2w .. Drlg. 2,810 ft.

PAWNEE COUNTY

F. C. Troupe's No. 1 Lovett, CEL NE NE Sec. 31-21-16w .. Shut down 1,560 ft.

PHILLIPS COUNTY

Watsonia Oil Co.'s No. 1 Marklein, NE cor. SW Sec. 21-3-19w ..... Drlg. 3,015 ft.
British American Oil Co.'s No. 1 Weinman, C SW SW Sec. 34-2-19w ..... Rig.

RENO COUNTY

Austin Drilling Co.'s No. 1 Strickley, SW cor. NW Sec. 17-26-5w ..... Rig.

RICE COUNTY

Allison & Fitzwilliams' No 1 Poland, NE cor. SW NE Sec. 36-19-8w ..... Cellar.
Higgins & Stembubble's No. 1 Shurr, NE cor. SW Sec. 21-20-10w ..... Spudded and shut down.

ROOKS COUNTY

Empire G. & F. Co.'s No. 1 Woodrill, NE cor. SE NW Sec. 15-8-18w ..... Drlg. 3,116 ft.
Prairie Oil & Gas Co.'s No. 1 Sandberg, C SW Sec. 20-9-18w ..... Rig.
Krueger et al's No. 1 Poore, NE cor. NE Sec. 14-8-16w .. Shut down 3,230 ft.
Burford & Brimm's No. 1 Toxa, NE cor. SW SE Sec. 22-19-17w ..... Spudded and shut down.
Skelly & Mid-West's No. 1 Jones, SW cor. NE NW Sec. 28-7-16w ..... Shut down 3,485 ft.

RUSH COUNTY

Danciger Valerius & Chenney's No. 1 Schurman, NW cor. SE NW Sec. 27-17-17w ..... 11,000,000 ft. gas 3,575-79 ft. shut in as a gas well.
Phillips Pet. Co.'s No. 1 Legleiter, NE cor. NW SE Sec. 10-16-18w ..... Rig.
Sinclair Oil & Gas Co.'s No. 1 Berching, NW cor. NE NW Sec. 9-16-16w ..... Drlg. 3,425 ft.
Danciger Oil & Ref. Co.'s No. 1 Poland, NE cor. SW NE Sec 17-19-17w ..... Spudded.

RUSSELL COUNTY

Gypsy Oil Co.'s No. 1 Cook, C NE SE Sec. 10-13-15w .... Dry and abandoned 3,448 ft.
Stearns & Streeter's No. 1 Haise, NE cor. SE SE Sec. 36-12-15w ..... Dry and abandoned 3,305 ft.
Joe Liggett's No. 1 Maier, SE cor. NE SE Sec. 8-11-15w.. Top Oswald 3,016 ft.; show oil and water, drlg. 3,280 ft.

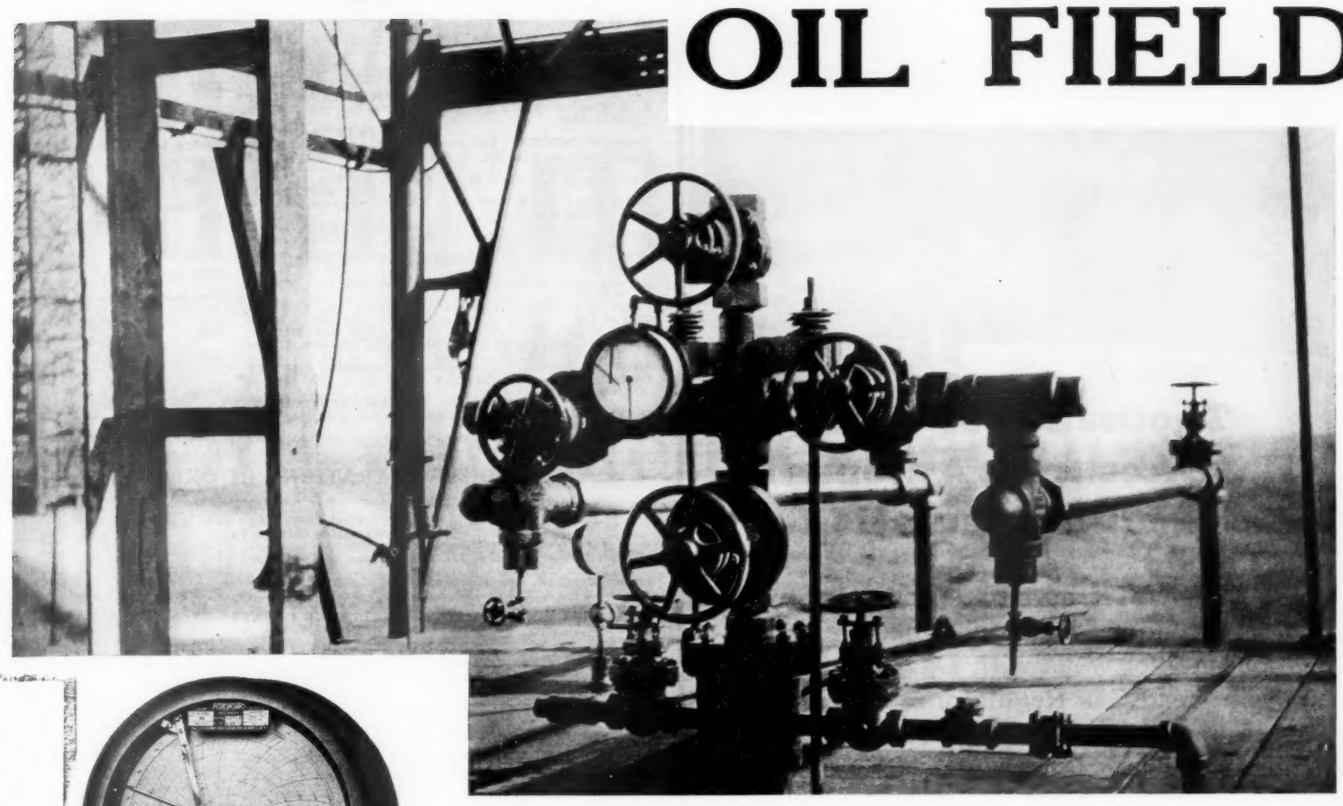
SALINE COUNTY

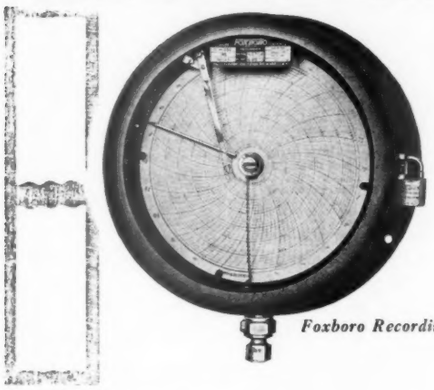
M. Esty et al's No. 1 Peterson, C NE Sec. 6-16-5w ..... Spudded and shut down.
Boyle et al's No. 1 Miller, SW cor. SE Sec. 21-16-1w .... Drlg. 2,300 ft.
Nathan Jones et al's No. 1 Robertson, NW cor. SW Sec. 27-14-2w ..... Drlg. 2,650 ft.

SEDGWICK COUNTY

Bu-Vi-Bar et al's No. 1 Roberts, SE cor. SW Sec. 1-26-2w ..... Rig.
E. B. Shawver et al's No. 1 Broels, NE cor. SW Sec. 5-26-2e ..... Drlg. 1,100 ft.
Barnsdall Oil Co.'s No. 1 Means, NW cor. SW Sec. 34-27-2 ..... Drlg. 1,860 ft.
Lewis et al's No. 1 Taylor, NW cor. NE Sec. 23-27-2 .... Drlg. 785 ft.
J. H. Tatlock et al's No. 1 Goeldner, NW cor. NE Sec. 6-29-2e ..... Shut down 2,200 ft.
La Robb Oil Co.'s No. 1 Davis, SE cor. SE Sec. 36-25-1w.. Underreaming 3,260 ft.
Fyser et al's No. 1 Stroot, SW cor. NW, Sec. 8-26-2w .... Spudded.

Taking the Pulse of the OIL FIELD





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Maglason et al's No. 1 Buckles, NW cor. SE Sec. 3-28-1w..Shut down 250 ft.
McCulloch Oil Co.'s No. 1 John, C NE SW NE Sec. 24-29-1e ..... Drlg. 1,200 ft.
Morgan & Tilley's No. 1 Fitzgerald, NW cor. NE Sec. 6-26-1w ..... Rig.
Barnsdall Oil Co.'s No. 1 Faber, SW cor. NW Sec. 6-27-1w ..... Drlg. 2,950 ft.
Bu-Vi-Bar Pet. Co.'s No. 1 Steel, SE cor. SE Sec. 1-26-2w..Drlg. 3,275 ft.
Connell & Slick's No. 1 Cross, NE cor. NE Sec. 27-25-1w..Drlg. 2,650 ft.
VanZant & Mason's No. 1 Fox, C NW SW Sec. 19-25-1w..Shut down 2,780 ft.
Barnsdall Oil Co.'s No. 1 Samuels, NE cor. NW Sec. 24-25-1 ..... Drlg. 1,860 ft.
Marland Prod. Co.'s No. 1 Goodrich, SW cor. NE SW Sec. 16-25-1 ..... Flowed 2,120 bbls. in 12 hours; pinched in.
Shell Pet. Corp.'s No. 1 Lygrisse, SE cor. NE Sec. 15-26-2e ..... Rig.

SHERMAN COUNTY

A. L. Henson et al's No. 1 Murry, NE cor. SE NW Sec. 22-7-40w ..... Shut down 3,035 ft.

STEVENS COUNTY

Trees Oil Co.'s No. 1 Thompson, C NE SW Sec. 3-35-38w..Casing trouble 600 ft.
W. Sidwell et al's No. 1 Kelly, SW cor. NE Sec. 16-34-28w ..... Shut down 1,213 ft.
McKanna et al's No. 1 Haun, SE cor. NE Sec. 10-33-28w..Drlg. 1,510 ft.

SMITH COUNTY

Mid-Kansas Oil & Gas Co.'s No. 1 Unknown, NE cor. NE Sec. 4-2-13w ..... Rig.

SUMNER COUNTY

McCulloch Oil Co.'s No. 1 Teettie, SW cor. NE Sec. 29-34-1w ..... Drlg. 4,350 ft.
Gypsy Oil Co.'s No. 1 Williams, NW SE SW Sec. 16-35-3w ..... Drlg. 4,385 ft.
Helmerich & Payne's No. 1 Warlick, SE cor. NE Sec. 8-34-2 ..... Dry and abandoned 3,854 ft.
Otstot et al's No. 1 Barlow, SE cor. SE Sec. 22-33-3w ..Plugging back to 4,150 ft.
George Dickey's No. 1 Knox, SW cor. NE Sec. 3-35-1w ..Dry and abandoned 4,248 ft.
Otstot et al's No. 1 Volker, NW cor. NE Sec. 9-35-1 ....Rig.
Davidson and others' No. 1 Strickland, SW cor. SE Sec. 12-35-1w ..... Rig.

TREGO COUNTY

Central Commercial Oil Co.'s No. 1 Ellis, NE cor. SW NE Sec. 20-13-21w ..... Drlg. 3,030 ft.

WASHINGTON COUNTY

McCool & Vincent's No. 1 Linn, NW cor. NE Sec. 27-4-3..Rig.

WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 42)

OKLAHOMA COUNTY

Slick & Bailey's No. 1 Koester, C SE NE Sec. 18-13-3w...Drlg. 4,590 ft.
Cromwell & Franklin's No. 1 Thompson, SW cor. NE NE Sec. 15-12-3w ..... Drlg. 7,080 ft.
Indian Terr. Ill. Oil Co.'s No. 1 fee, C SE SE Sec. 24-11-3w ..... Flowing 5,562 bbls. daily from 6,483 ft.

OKFUSKEE COUNTY

Moose & Daniels' No. 1 Stidham, SW cor. NW Sec. 4-11-10 ..... Shut down 622 ft.
T. B. Slick Inc.'s No. 1 Wolf, SE cor. NE SE Sec. 21-11-7. Drlg. 3,150 ft.
Dixie Oil Co.'s No. 1 Drew, NE cor. SW Sec. 8-13-10.....Dry and abandoned 3,437 ft.
Erwin and others' No. 1 Patterson, NW cor. SE Sec. 15-13-9 ..... Location.

SEQUOYAH COUNTY

Cooper & Badger's No. 1 Young, NW cor. NE NE Sec. 7-12-20 ..... Shut down 440 ft.
Hunt and others' No. 1 Unknown, SE cor. NW SW Sec. 12-12-23 ..... Drlg. 825 ft.
Buffington et al's No. 1 Meicher, C SW NW Sec. 31-12-24 ..... Drlg. 1,500 ft.

PAWNEE COUNTY

Washoma Oil Co. and others' No. 1 Buffalo, SE cor. NE Sec. 33-22-5 ..... Shut down 3,640 ft.

POTTAWATOMIE COUNTY

Phillips-Atlantic's No. 1 Winrow, SW cor. NE NE Sec. 11-9-4 ..... Drlg. 4,620 ft.
Shell Pet. Corp.'s No. 1 Livingston, SW cor. SE Sec. 33-7-5 ..... Drlg. 3,750 ft.
Superior Oil Co.'s No. 1 Herminghausen, SW cor. NW NE Sec. 24-8-2 ..... Fishing 4,959 ft.
Shell Pet. Corp.'s No. 1 Lowe, SW cor. NW NE Sec. 17-6-5 ..... Cleaning out 4,920 ft.
Pure Oil Co.'s No. 1 Lindley, SE cor. SW SE Sec. 18-8-5..Hunton 4,124-40 ft., flowing 1,600 bbls.
T. B. Slick's No. 1 Sailor, SE cor. NW NW Sec. 12-8-3...Drlg. 3,015 ft.
T. B. Slick and Roxana Pet. Corp.'s No. 1 Hurst, SE cor. NW NW Sec. 17-7-2 ..... Shut down 6,098 ft.
Tomlinson et al's No. 1 Wisenhurst, NW cor. NE SE Sec. 35-7-5 ..... Wilcox sand 4,582-94 ft.; hole full water; dry and abandoned.
Phillips Petroleum Co.'s No. 1 Parman, SE cor. SW Sec. 15-8-4 ..... Wilcox sand 4,644-73; 3,000 ft. of water; dry and abandoned.
Champlin Refining Co.'s No. 1 Foster, SW cor. NE SW Sec. 14-7-5 ..... Wilcox 4,419-24; hole full water.
Shell Pet. Corp.'s No. 1 Wyatt, SW cor. NW NE Sec. 17-6-5 ..... Wilcox 4,340-57; hole full water
Mid-Continent Petroleum Corp.'s No. 1 James, SE cor. SE Sec. 22-5-3 ..... Location.

CADDO COUNTY

Magnolia Petroleum Co.'s No. 1 Shelby, SW cor. SW Sec. 28-10-12w ..... Dry and abandoned 4,472 ft.
J. V. Bailey's No. 1 Hubbard C NE NW Sec. 1-10-6w...Shut down 150 ft.
Wirt Franklin's No. 1 James, NW cor. NW Sec. 18-10-13w..Rig.
W. J. Hartley's No. 1 Galbreath, SE cor. NW SE Sec. 29-5-12w ..... Shut down 3,394 ft.
English Drilling Co.'s No. 2 Pruitt, CNL NW SE Sec. 22-6-10w ..... Rigged up and shut down.
Red Bank Oil Co.'s No. 1 Shanklin, C NW Sec. 15-12-11w..Underreaming 4,585 ft.

OSAGE COUNTY

White Eagle Oil & Ref. Co.'s No. 1, SE cor. NE Sec. 25-26-6 ..... Dry and abandoned 2,802 ft.

STEPHENS COUNTY

Wade-Martin & Smythe's No. 1 Vestal, NE cor. SE Sec. 20-2-5w ..... Dry and abandoned 2,510 ft.
Stahl & Burris' No. 1 Jefferson, SE cor. NE NW Sec. 2-1-7w ..... Drlg. 2,576 ft.

SEMINOLE COUNTY

Prairie Oil & Gas Co.'s No. 1 Davis, NE SE Sec. 21-10-7..Rigging up standard tools 3,665 ft.
Superior and Fuhrman's No. 1 Fay, NW cor. SE SW Sec. 27-11-6 ..... Running 6-inch, 4,644 ft.
Magnolia Pet. Co.'s No. 1 Germany, SE cor. NW Sec. 30-9-5 ..... Underreaming 4,357 ft.
Phillips Pet. Co.'s No. 1 Miller, NW cor. SW Sec. 34-11-7 ..... Skidded rig, drlg. 1,100 ft.
Burke-Greis Oil Co.'s No. 1 Cyrus, SE cor. NE NW Sec. 13-9-7 ..... Drlg. 3,320 ft.
Harris and others' No. 1 Stidham, SE cor. NW Sec. 30-9-8 ..... Dry and abandoned 4,582 ft.
C. B. Shaffer's No. 1 Carolina, SE cor. SW NE Sec. 4-6-7. Drlg. 4,725 ft.
E. W. Whitney's No. 1 Harjo, NE cor. NW NE Sec. 25-7-6 ..... Plugged back 4,325 ft., and shut down.
Gypsy Oil Co.'s No. 1 Andrews, NE SE NW Sec. 27-10-7 ..... Shut down 3,730 ft.
Shaffer Oil & Ref. Co.'s No. 1 Catchochee, SW cor. SW NE Sec. 18-10-7 ..... Shut down 3,730 ft.
Prairie Oil & Gas Co.'s No. 1 Rogers, SE cor. NE SE Sec. 14-10-6 ..... Dry and abandoned 4,729 ft.
T. W. Adkins' No. 1 Reed, NE cor. NW Sec. 2-8-8 .....Casing 3,205 ft.
T. B. Slick, Inc.'s No. 1 Tiger, NW cor. SW NE Sec. 13-8-5 ..... Recementing 5-inch, 4,493 ft.
Magnolia Petroleum Co.'s No. 1 Sissy, NW cor. NE Sec. 33-8-7 ..... Wilcox 4,332-42 ft.; hole full of water; dry and abandoned.
McCulloch Oil Co.'s No. 1 McGilbray, SW cor. SW NE Sec. 4-8-3 ..... Bad hole, 1,450 ft.
Empire Gas & Fuel Co.'s No. 1 Harjo, SW cor. NW SE Sec. 17-7-6 ..... Hole full water, Wilcox 4,593-4,600 ft.

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A New Name for an old Firm

Effective January 1, 1929

BAKER CASING SHOE COMPANY

becomes—

BAKER

OIL TOOLS, INC.

For a long time we have felt the old firm name inadequately described our business. True, casing shoes are still a very important part of our output, but we have developed so many other oil tools—each one unique in its field—each one characterized by its practicality—that we have decided on a new name that would better inform our customers about our products.

Therefore, effective January 1, 1929, the name becomes BAKER OIL TOOLS, INC. All addresses and branches remain the same.

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OIL TOOLS, INC.
P. O. Box L, Huntington Park, Calif.

California Branches:

Coalinga Ventura Taft Bakersfield

Mid-Continent Branches:
Tulsa, Oklahoma
Houston, Texas

Export Sales Office:
25 Broadway, New York City

Mid-Continent Representatives:
B & A Specialty Co.,
220 E. Brady St., Tulsa, Okla.
2301 Commerce St., Houston, Texas

Marland Oil Co.'s No. 1 Strothers, NW cor. SE NE Sec. 5-19-7 ..... Fishing 3,550 ft.
Magnolia Pet. Co.'s No. 1 Carroll, SW cor. NW SE sec. 1-7-5 ..... Drlg. 3,075 ft.
T. B. Slick and others' No. 1 Davis, NE cor. NE Sec. 26-6-6 ..... Rig.

TILLMAN COUNTY

Allen & Treadwell's No. 1 Howell, NW cor. SE Sec. 13-1-17w ..... Drlg. 400 ft.

MAJOR COUNTY

Randau & Mooney's No. 1 Parker, SE cor. NE NW Sec. 4-23-16w ..... Show of oil 1,235 ft.; shut down
Earl and others' No. 1 Turner, C NE NE Sec. 23-20-14w .. Rig.
Wilson et al's No. 1 Unknown, NE cor. NE Sec. 4-23-16w .. Cellar.

WOODS COUNTY

E. K. Miller's No. 1 Copenhavers, NW cor. NW Sec. 18-24-13w ..... Rig.
Gypsy-Prairie and others' No. 1 Thompson, SE cor. SW Sec. 10-25-15w ..... Set surface pipe.
Sinclair Oil & Gas Co.'s No. 1 Thompson, C SW SW Sec. 33-27-16w ..... Rig.

MURRAY COUNTY

Bison Oil Co.'s No. 1 Labor, NW cor. NW Sec. 17-1-2 ... Drlg. 1,770 ft.

DEWEY COUNTY

Huckaby & McCoy's No. 1 Perfect, NE cor. NE Sec. 9-18-15w ..... Shut down 4,355 ft.
Don Sifers' No. 1 Jordan, SW cor. NW Sec. 16-16-17w .... Spudded and shut down.

BECKHAM COUNTY

C. & H. Petroleum Co.'s No. 1 Barnes, SW cor. NW NE Sec. 32-9-22w ..... Shut down 3,460 ft.
Martin and others' No. 1 Cluck, NW cor. SE Sec. 1-8-25w . Drlg. 2,470 ft.
L. C. Hivicks' No. 1 Davis, C NW NE Sec. 4-11-26w .... Shut down 725 ft.
Producers Exploration Co.'s No. 1 Seldell, SE cor. SW SW Sec. 17-9-22w ..... Shut down 2,402 ft.
Carson and others' No. 1 Danby, SW cor. SE NE Sec. 20-8-22w ..... Drlg. 400 ft.
Pferffel and others' No. 1-A Carter, NE cor. NE Sec. 35-9-22w ..... Shut down 1,500 ft.
Day Oil Co.'s No. 1 Ault, NW cor. NW Sec. 33-8-21w .... Drlg. 1,050 ft.

GRADY COUNTY

Remington and others' No. 1 Fryrear, SW SW NE Sec. 13-9-5w ..... Shut down 720 ft.
J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w .... Spudded and shut down.
J. M. Henry and others' No. 1 Abraham, SE cor. NW Sec. 4-5-8w ..... Rig.
Commerce Development Co.'s No. 1 Taylor, C NE NW Sec. 4-3-7w ..... Testing sand 2,410-21 ft.
J. B. Nichols' No. 1 Brake, SE cor. NE SE Sec. 7-5-7w .. Shut down 2,307 ft.

McINTOSH COUNTY

Marione and others' No. 1 Smith, SW cor. NW SE Sec. 32-9-16 ..... Shut down 2,387 ft., corrected.
Patterson and others' No. 1 Smith, SW cor. NW SE Sec. 32-9-16 ..... Shut down 5,451 ft.
Wolfe and others' No. 1 Unknown, NW cor. SE Sec. 15-12-18 ..... Rig on ground.

CLEVELAND COUNTY

Daniels & LeWright's No. 1 Vandever, C SW Sec. 15-1-1w ..... Shut down 3,130 ft.
Phillips Pet. and T. B. Slick's No. 1 Hentleman, NE cor. NE Sec. 8-10-2w ..... Rig.

KIOWA COUNTY

Blue Mountain Oil Co.'s No. 1 Jones, SE cor. NW NW Sec. 17-5-14w ..... Shut down 530 ft.
Sloan-Russell's No. 1 Rushton, NE cor. SW SE Sec. 6-5-14w ..... Drlg. 1,590 ft.
J. M. Burke's No. 1 Fox, SW cor. NW Sec. 4-6-16w ..... Shut down 937 ft.
Johnson & McDowell's No. 1 Thompson, SW cor. NE Sec. 6-6-15w ..... Shut down 2,150 ft.
Adams et al's No. 1 Fanning, NW cor. SW Sec. 2-6-17w .. Machine.
Dave Malernee's No. 1 Van Kirk, NW cor. NW Sec. 35-7-15w ..... Shut down 858 ft. in granite.
Sloan-Russell's No. 1 fee, NE cor. NE Sec. 31-6-14w .... Location abandoned.
A. C. Varner and others' No. 1 Bonham, CSL NW NW Sec. 5-6-18w ..... Shut down 1,127 ft.

CUSTER COUNTY

W. E. Witt's No. 1 Wellman, C SE Sec. 1-14-14w ..... Rig and tools.

PONTOTOC COUNTY

Moore & Curran's No. 1 Allen, SE cor. SW SW Sec. 23-5-5 ..... Shut down 1,460 ft.
Shell Pet. Corp.'s No. 1 Folsom, NW cor. SW Sec. 20-4-4 ..... Shut down 2,605 ft.
Texas Pacific Coal & Oil Co.'s No. 1 Stewart, C SW NE Sec. 11-5-8 ..... Dry and abandoned 3,509 ft.
American Oil Refining Co.'s No. 1 Jones, NE cor. NE Sec. 18-5-5 ..... Sand 2,500-40 ft., swab 40 bbls.

GARVIN COUNTY

R. F. Garland's No. 1 Strickland, SW NW SW Sec. 10-4-3 ..... Dry and abandoned 3,493 ft.

COMANCHE COUNTY

Green and others' No. 1 Wilson, C NE SW Sec. 14-1-12w . Shut down 4,055 ft.
Wirt Franklin Pet. Co.'s No. 2 Holler, NW cor. NW Sec. 2-4-11w ..... Drlg. 1,550 ft.

COAL COUNTY

McCrow and others' No. 1 Patton, SW SE NE Sec. 35-1-8 ..... Shot 30 qts. 1,850-85 ft.; pumping 11 bbls.
Indian Territory Illuminating Oil Co.'s No. 1 Harris, SW cor. NW Sec. 10-1-11 ..... Repairing rig 5,015 ft.
Robert Galbreath and others' No. 1 Jones, SW cor. SE Sec. 24-1-9 ..... Drlg. 3,060 ft.

PITTSBURG COUNTY

McAylor and others' No. 1 Reed, NW cor. SW NW Sec. 7-6-14 ..... Abandoned 1,103 ft.
Kerr & Koy's No. 1 Hall, C NW NW Sec. 32-4-12 .... Rigging up standard tools.

JACKSON COUNTY

Atlus Oil Co.'s No. 1 Northington, NE cor. NE Sec. 4-1-20w ..... Shut down 2,020 ft.

SOUTHERN OKLAHOMA

BRYAN COUNTY

Alexander & Oppenheimer's No. 1 Hampton, SE cor. NE Sec. 26-7s-11 ..... Shut down 1,425 ft.
McNull & Gross' No. 1 Smith, CEL SE NW NE Sec. 11-6s-9e ..... Drlg. 300 ft.

MURRAY COUNTY

Alter and others' No. 1 Johnson, SW cor. NW Sec. 14-4-7. Spudded and shut down.

COTTON COUNTY

Cuyler & Pyson's No. 1 Thomas, SE cor. SE SW Sec. 16-4-12w ..... Shut down 2,127 ft.
G. E. Crane and others' No. 1 Montgomery, C NW NE Sec. 33-2s-9w ..... Dry and abandoned 3,505 ft.

JEFFERSON COUNTY

Fritz and others' No. 1 Barrett, C SE SE Sec. 5-6s-7w... Dry and abandoned 2,269 ft.
Bridewell and others' No. 1 Spring, NE cor. NW SE Sec. 25-6s-6w ..... Dry and abandoned 2,172 ft.
Amerada Petroleum Corp.'s No. 1 Emerson, NW cor. SE SW Sec. 28-5s-8w ..... Shut down 4,516 ft.

CHOCTAW COUNTY

Choctaw Petroleum Co.'s No. 1 Wilson, SW cor. SW Sec. 15-6-19 ..... Shut down 1,346 ft.

TILMAN COUNTY

Bray and others' No. 1 Barker, NE cor. SW NW Sec. 9-1-15w ..... Shut down 805 ft.
Dixie Oil Co.'s No. 1 McKinney, NE cor. NE Sec. 29-3s-18w ..... Drlg. 898 ft.
A. N. Pearson's No. 1 Mounts, SW cor. SW Sec. 3-5s-15w. Dry and abandoned 3,203 ft., show heavy oil.
Stanley & McGregor's No. 1 Mock, NW cor. NW SW Sec. 33-1-20w ..... Shut down 2,425 ft.
Landfair and others' No. 1 Smith, SE SW SE Sec. 6-2s-15w ..... Shut down 2,535 ft.

JOHNSTON COUNTY

Wapanucka Oil Co.'s No. 1 Banks, Sec. 28-2s-9 ..... Shut down 1,530 ft.
Bush Creek Oil Co.'s No. 1 Kirby, SE cor. NE NW Sec. 9-4-7 ..... Shut down for casing 405 ft.
Smith & Kinsley's No. 1 Lane, SE cor. NW Sec. 29-1-7 Shut down 1,306 ft.
Yale Oil Syndicate's No. 1 Craige, C NW NE Sec. 36-3s-9e ..... Casing 830 ft.
Sullivan and others' No. 1 Wines, NW NE NW Sec. 11-7s-8e ..... Shut down 475 ft.
E. J. Stump and others' No. 1 McGinnis, SW Sec. 26-3s-8w ..... Rig.
McCrow and others' No. 1 Trust, SW Sec. 12-1s-8e ..... Drlg. 879 ft.

CARTER COUNTY

Devonian Oil Co.'s No. 1 Myer, NW cor. SE Sec. 19-5s-3w. Rig and tools.
Avon-Dickey's No. 1 Anderson, NE cor. SE NE SE Sec. 32-4s-2 ..... Rigged up and shut down.

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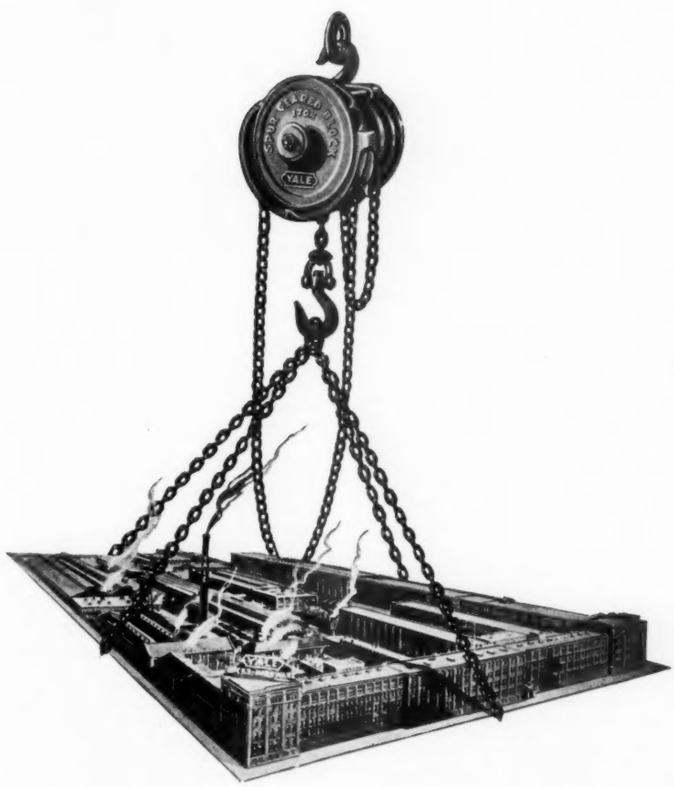

YALE Chain Blocks are the best that money and skill can produce. Their *maximum maintained efficiency* is the result of over fifty years' experience in making every part of every Yale Chain Block right in the Yale factory. The plant behind the Block is your great guarantee of Yale superiority.

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YALE Hoisting and Conveying Systems

YALE MARKED IS YALE MADE

Safety as a Policy of Self Interest

Chairman Prizer of Vacuum Oil Co. Recounts Evolution Which Won Program Universal Support of Employers

By Edward Prizer*
Chairman of the Board, Vacuum Oil Co., New York City

I have been thinking over this question of safety since I first joined the petroleum industry, and some things have very much interested me.

Forty-seven years ago, it is a fair statement, the worker carried the risk. He had redress in common law, but the manufacturer was protected by contributory negligence; and therefore between common law and contributory negligence, the worker fell between the upper and the nether millstones. I remember a circumstance before the days of compulsory liability insurance, where we had two men working on a tank, one helping the other, one holding the ladder and the other going up. The man going up the ladder let slip a heavy wrench and killed his helper at the bottom of the ladder. Under the law that man had no redress at that time, because of contributory negligence absolving the employer of the liability.

Today that sort of principle could not exist, for two reasons. There were a lot of shyster lawyers who made a business of carrying on damage suits based upon their nuisance value, to extract from employers payments for injuries, real or assumed; and the lengths that they went to compel employers to pay to avoid such nuisance, were quite remarkable. I remember one or two cases in Rochester, where unjust claims were taken by such lawyers, were set down for hearing at 7 o'clock in the morning, in a country district not reached by railroad, and as automobiles had not yet been invented our treasurer was required to get up at 4 o'clock and drive out into the country and present our side of the case; otherwise judgment would have been given against us by default. We had cases where our carting was done by contractors having wagons, which carried our signs. When an accident occurred, some lawyer would come along and say, "Your wagon ran into and injured my client," and we said we had no wagons. "Well, the wagon was carrying your sign, and it doesn't make any difference; we are going to sue you anyway. If you don't want the bother of being sued, you had better make payment anyway."

Old Ideas Abandoned

Well, that went on for a considerable time, until there began to be an awakening of conscience through the country, largely led at the time by President Roosevelt, that it was manifestly unjust for the industrial worker to carry the risk; that it must be carried by the industry itself, and that the unavoidable risk of injury and death should be put upon the cost of the products and thus distributed to the community as a whole. Now, I can't say that industry itself overly welcomed this movement. I know for a while there was a great deal of question whether it was wise, whether it might not lead to more evils than the old system; but anyway it went through, and I think there are no industrial organizations, employing a considerable number of men, that are not thankful that the law itself prescribes what shall be done in the case of injury and harm to the employe.

Well, now, the effect of those laws touched the pocketbook of the employer—that was the first result—and he began to see, on examining his works, how many accidents there were that might be prevented if he deliberately set about to do it. That was his first reaction; and I know a great body of employers in every state where there was a compulsory liability law, who went through their plants with very great care to see whether there were unprotected spots that might result in the injury of others through being unguarded, whether there was not carelessness that might be avoided, and whether there might not be some system of improving the condition of their working people in regard to injury.

But after a time this went further. There came a feeling on the part of the employer over and beyond a mere question of the money. There was a moral side that he should consider. While he might have been, in the old times, somewhat hardened to industrial accidents and thought they were necessarily a part of industrial operation, now he began to think that he wasn't working with machines as regards to his labor; he was working with men and women, people like himself, who were entitled to every possible consideration and assistance to prevent accidents happening through their own carelessness, the carelessness of other people, or the operation of machinery; and therefore there was a complete revolution on the part of the employers as a whole.

Sick Benefits

And I know that a great many have gone to lengths that they never would have dreamed possible at the time the first compulsory insurance was talked of. There are few large employers today that don't go beyond the hazard of the shop or the factory. They provide for sick benefits. They consider that a man who is going through the valley of life is liable to something else than getting his hand or his leg hurt. He may get pneumonia, or typhoid fever. You can't throw his family on the charity of the community when he is sick. And therefore something had to be done outside of the mere hazards of the shop and of the factory itself. So we have a system of sick benefit, which I think nearly all progressive concerns now take into careful consideration.

But quite a few of them got a bit further. They say if an employe dies, no matter from what cause (not because he is killed in the factory) but if he dies from disease or his automobile is run into and he is killed, there is his family, and that family should not be put as a charge upon the benevolence of the community, but that industry should take care to a very considerable degree of the needs of that family, particularly where there are small children, until they can restore themselves and get on a self-supporting basis. It has been one of the great pleasures to me in our organization that our death benefit plan has been operating all over the world in every place where we have employes. It has been one of the finest things that our company ever adopted, and has lifted the burden off of many depressed and unhappy families, who did not know where they would turn when the breadwinner was gone, through disease or something of that kind, and they had to look to the future and establish some system by which they might be self-supporting.

Now, I want to say that the word "accident" frequently implies something unavoidable. That isn't so. No accident is ever without a cause. The cause lies back somewhere; and in order to reach and prevent the accident, you must stop the cause. In my business experience I have known a number of cases where the cause was self-evident. When I was in Rochester we had an absolutely ironclad rule, before the days of employer liability, that no man should enter an empty tank which had contained oil unless somebody was there right with him, mainly and principally to have a rope around him, no matter how he might have thought that tank had been steamed out. But one day we missed one of our men, a good worker. We hunted around the works, and found him suffocated in the bottom of one of the tanks that he thought was properly steamed; he had gone in alone, contrary to rules, and was suffocated. We had the same thing happen in one of our tanks in one of our German refineries.

Carelessness

Well, that is carelessness. Sometimes carelessness goes to almost a ridiculous degree. For instance, insanity. We had a man in our Polish refinery who came down one day with a new suit of overalls on. He got them smeared up, didn't like the looks of them, so he drenched himself pretty well with gasoline to take off the smear, and then thought while it was drying he would have a quiet smoke, and he went into an outhouse and lit a cigaret and burned himself to death. You would think that was almost impossible, but it did happen.

Now, I remember a circumstance in Rochester, to show that accidents always have a cause. Our man used to come down to the office with an old horse and a democrat wagon, and that horse would stand without hitching. He usually took a quiet nap while the man went in for orders. One day the circus was coming, and when the man came out to get on his wagon and gathered the reins together, there was a great crowd everywhere, in the streets; people were way out in the middle of the street, and the sidewalk was all jammed. The man thought, "Well, I'll sit here; I won't push through that crowd, and anyway I want to see the circus."

So he sat there in his wagon, the reins in his hands. But when that horse smelled the elephants and looked around and saw them coming behind him, he woke up as he never woke up in his life. He went down through that crowd, and if he had'nt run into an electric light standard, he might have been going yet. He mowed the people down, breaking arms and legs and doing a great deal of damage. Legally the people had no right in the street. Legally our man had a perfect right to be there with his horse. He had just come out of the office, and had a right to do that. The horse was under legal control; but he had no business to be there, just the same, and the people had no business to be in the street. Well, it was our horse, and we felt the responsibility sufficiently to pay $8,000 or $9,000 to patch up broken legs and broken arms, bruised heads, etc. Well, certainly you can trace cause and effect in that.

Constant Vigilance

Now, in the control of your people in your works, constant vigilance and education are necessary. We don't all realize that the old adage, "Familiarty breeds contempt," is absolutely true. A man gets used to doing things over and over again, and finally he gets careless, something happens, injury follows. I think that all employers owe an educational method with their working people, whether they are clerks in the office, whether they are workmen, whether they are salesmen, or what they are, because this reacts a great deal more than just in the industry operation. A man needen't be considered a coward because he is considering safety first. If he is going across a much traveled street, with automobiles flying to and fro, it is not cowardice if he waits until the sign is in favor of his crossing over. If he is driving an automobile, it is not cowardice to exercise great safety.

I was interested in a report in Massachusetts, that of the accidents that they analyzed; very few had come from speed they had come from recklessness and in attention, but very few from defects in the automobile itself. People don't think Their minds are on something else. I remember one of our doctors in Roche ter who was badly injured once. He was driving down the street, his mind very busy on a case, and he turned right in front of a tram car, and his vehicle was smashed and he was badly injured. The first thing he said was that the street car driver was not responsible. He said "I heard him clanging his bell, but I was so occupied with thought of the case, that I simply forgot and paid no attention."

That very often happens in the work. The question is how to educate your people.

Physical Standards

Then we have got to go a little step further. We have got to make sure that our people are physically and mentally sound for the task that they are to perform. Therefore there has been growing up a system of physical medical examination for employes. When we first installed that there was a good deal of resentment, on the part of our workers, but we found out some things that were very useful. We found out that men doing things, lifting work, that the condition of their hearts didn't justify. They might drop dead. Others had hernia that had been undiscovered by anybody but themselves and perhaps their own families, and they were doing things that they were totally unjustified in doing. Of course, that was an outgrowth of the employers' liability, but at the same time it resulted in moving or less adjusting men to their work and giving them a longer lease of life than they possibly would have if they had gone on with the labors that physically they were quite unable to do. And of course there is a nervous condition and reaction to rapid running machines that requires tests to see whether the operator is tuned to that sort of work, not liable to get his hands or his feet or something else in the machines through lack of nervous and mental reaction to his peculiar line of work.

All of these things are in the line of safety. Now, there has been a gradual growing idea as to the sacredness of human life. It didn't exist when I first went into the business. I am frank to say there was a very strong feeling that labor was a commodity, that you could bargain for it as you could a ton of coal, and if one man got hurt and died or was killed, there were plenty more to take his place. I think we are now changing from that attitude of mind, that instead we believe we are all the same of the same material, the same mental and spiritual makeup, no matter what our duties are; and that those that are in position to do it, must overlook, supervise, and help to prevent injury and loss of life. We must increase the average life of our people as a whole if we are to prosper.

We hear a good deal about the declining birth rate; but as against that there is the increase in life expectancy, and we can all contribute to that by various methods of safety—safety not alone a mere machine operation, but safety to disease, safety in the home, the use of the visiting nurses which are employed by many of the large corporations to follow up the sick, to go into the home and see what can be done, whether the sick one is getting the proper care, the right sort of nursing and food. All these things lead to this principle of safety, and we have got to consider it everywhere on a broad and humanitarian line.

I am glad in my business experience

*Before National Safety Council.

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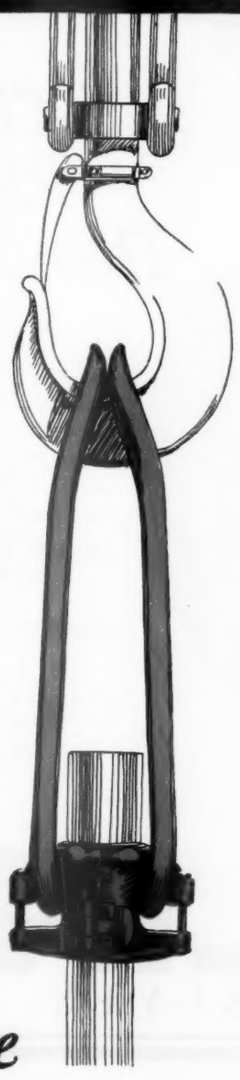

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that this thing came right up to the employer. It was a very decided shock. He thought, "And now it is going to cost me a lot of money, and the thing to do is to prevent my paying out undue sums." But it did relieve him of a whole lot of shyster tricks and annoying demands for trumped up damages. As a rule, if a corporation or large employer was known to have money, it was the custom to give a very considerable verdict in favor of the plaintiff; and if unjust, it meant an appeal and carrying on; and then finally the nuisance got so bad that the employer would hunt up the fellow's lawyer and say, "What will you take to call it off? We are tired of it." That was the principle. Now we have a system that is just and fair, and we all must endeavor to find out the best practice, in the matter of injury and disease, among our body of employes wherever they are, and concentrate, constantly teach this practice. If you don't constantly press upon the point of carefulness, of consideration not only of themselves but others, they will fall down some time and then something will happen. I am sure none of us want accidents to happen. We look back upon accidents that have happened in our particular corporation or company with intense regret, knowing how easily they might have been prevented if we had only thought longer and further and been somewhat more careful.

In our company we are constantly preaching in every form, in our literature, in our work bulletins, in our instructions, this vital point of protection to the human element in every known way possible, not simply industry happenings, but from disease and from breakdown from work that they were not fitted for, giving them some other work that they are fitted for, trying to make them look forward to a happy and prosperous old age—not as we often see, broken down, crippled old men, who have served out their full years, thrown onto the cold world, with very little to take care of them. One of the things contributing to this spirit has been the pension systems which the various companies have organized, where a man can do his efficient labor to the end of his working capability, and then he feels he has a cushion that he can rest upon with comfort and satisfaction.

PIPE AND TUBE MILLS BOOK LARGE TONNAGE

By B. E. V. Luty

PITTSBURGH, Pa., Dec. 31. — Pipe and tube mills have booked quite a total tonnage of line pipe in the past few weeks, in relatively small lots and they also have a considerable tonnage still to deliver on large orders booked at various times in the past few months. The pipe and tube mills have done fairly well in line pipe for there has been an unusual volume. In other oil country goods they have done fairly well, perhaps nearly as well as in 1927 though of course not as well as in 1926. In standard or merchant pipe they have done well, with about the same tonnage as in 1927 and but little less than in 1926.

The steel market in the past fortnight has presented an appearance of quietness but this is more in appearance than in reality. In several lines the specifications have been very heavy, especially in certain lines in which old contracts were expiring and new contracts are on a higher price basis. This has given the mills a very good operation and also supplies a basis for very heavy operation in January.

December production of steel has been unusually heavy for December, making a new high record for that month. Average daily production in the month has been fully equal to average daily production during the year, whereas regularly December runs below the year's average. It runs higher only when the year itself has been a poor one and the industry is speeding up for a more active year. Both for the month and for the year production of steel ingots has been at about 85 per cent of reported capacity as of December 31, 1927. The year's total in ingots will run at least 50,000,000 gross tons, and more likely about 50,500,000 tons, there being about 15 per cent gain over 1927 and about 7 per cent gain over 1926, hitherto the record year.

While bars, shapes, and plates are commonly quoted at 1.90 to 2 cents, Pittsburgh, as the going market, the fact is that bars are much stronger than plates, and even single car loads of plates could be bought at 1.90 cents if the specifications are at all attractive. In bars and shapes single car loads for prompt shipment generally bring 1.95 or 2 cents according to specifications. The plate market in the Pittsburgh district and in the East has been very dull, due to there being very little freight car and ship building, while the H-beam has materially reduced the amount of plates needed in skeleton steel construction. H-beams have been made for years by the Bethlehem Steel Co. and for a year by the Steel Corp. Recently Bethlehem brought a $250,000,000 patent infringement suit against the Steel Corp. on the H-beam.

Ordinarily the future of steel cannot be predicted with certainty for altogether as much as six months, and predictions for a whole year, while commonly made in the festive holiday season, are really unwarranted. For the first three months of the new year it is practically certain steel production will be rising from its already high December rate.

KENTUCKY-TENNESSEE

(Continued from Page 62)

on the Sharp farm, near the well on the Easton farm.

The wildcat of Johnson and Young on the J. L. Mays farm, about 3 miles south of Utica, failed to make a producer and will be abandoned.

French and Carpenter found a duster on the Bob Mayfield, nearly a mile from the Frank Fuqua farm production.

M. B. French and others' No. 5 on the L. R. Howard farm, in the Jones Pool, is a rank duster.

Other Completions

In the Scottsville Field, of Allen County, in the Settle area, the Snowden-McSweeney Co.'s No. 33 on the T. J. Oliver farm pumped 3 bbls. at 421 feet. Mid-Southern Oil Co.'s No. 27 on the E. H. Woods 2,700 acres, was dry at 268 feet. S. T. Strum and others' test on the J. D. Starks lease is also a duster at 354 feet.

In Breckenridge County the Hoosier Oil & Development Co.'s Nos. 4, 5, 6 and 7 on the Glen Moorman farm are reported good for 10 bbls. each.

In McLean County, the Swiss Oil Corp. in a test on the Shacklett farm, near Sacramento, passed through three sands to a total depth of 1,500 feet, but none was productive enough to encourage further tests in the vicinity.

Near Pellville, in Hancock County, the Leeper Oil Co. drilled a dry hole on the Mattheis farm.

In the Glasgow Field of Barren County, Ziegler Brothers' No. 23 on the T. Mansfield farm is rated good for 10 bbls. Esslinger Oil Co.'s No. 17 Glass farm is a 15-bbl. initial pumper, and Fred Moore's No. 15 on his own farm is good for 10 bbls. under pump.

Field Pickups

George Engle and A. F. Berg are rigging up on the Ellis Bartlett farm, in close to the Ambrose Pool, in Ohio County.

Penn-Indiana Oil Co. is drilling No. 3 on the Bank land, near the Burton Pool, in Daviess County, along the Hartford Road.

The Armistead Oil Co. is due to bring in a test well on the Rena Brown, in the Pellville Pool, in Hancock County.

Smith, Randolph and others' well on the Bank of Whitesville lease, in Daviess County, is making a good showing, but not yet thoroughly completed. This well is close to the Burton Pool, opened by Daley and Loman some time ago, and one of the attractive spots of the county for development, regardless of the bringing in recently of a few dry holes.

W. G. Roder and others are starting a well on the J. E. Boreman, 2 miles north of the Jones Pool and north of the Leitchfield Road. Daley and Lowman are drilling a wildcat on the John Kopp farm, 6 miles southeast of Owensboro, also in Daviess County.

Miller and Damron have released their rights in the Hansford heirs lease in the Utica Pool, of Daviess County, to James Hardwick and other owners of the lease because of inability to make it a paying proposition. Miller and Damron released a one-half interest.

The well on the Herbert Salmon lease in the Red Hill district of Daviess County, owned by W. A. Battan, W. H. Duncan, B. H. Raydure, of Bowling Green, Ohio, and others has what is reported a nice showing for one of the best wells in the Red Hill area, and was drilled through 25 feet of rich sand when the engine broke down and the well is not yet completed. Top of the sand was struck at 937 feet.

MUSKEGON PIPE LINE APPROVED AS UTILITY

(Continued from Page 64)

line for about 2 miles will be started as soon as the pipe arrives.

Authorization of the city commission for the West Michigan Consumers Co. to supply gas to the public schools of Muskegon will be requested. It is estimated the schools will use about 10,000,000 feet a month.

The Pentwater city council has granted a 20-year franchise to the Central Michigan Pipe Line Co. to lay gas mains in the city and supply residents with natural gas from the wells of the Bowers Oil Corp. in Logan Township, Mason County. Scottville and Custer village in Mason County will be the first communities to be served. About 30 miles of line must be laid to supply Pentwater with gas. Another 30 miles would be necessary to supply Manistee with gas.

Robert Harper of New York and Thomas Hones of Chicago, industrial gas engineers, have started a survey of Grand Haven industries to determine how much gas would be required to operate their plants. The survey is being made for the Industrial Gas Co. of Michigan. Ottawa Oil Corp. interests are back of the proposal to lay a line for a distance of about 15 miles from the Muskegon Field to Grand Haven, Spring Lake and Ferrysburg, the twin cities of Ottawa County.

CALIFORNIA FIELDS

(Continued from Page 55)

low the 4,000-foot level in this field, several of which should be completed within a few weeks. This company's latest completion at Long Beach was No. 10 Nesa, brought in flowing 562 bbls. daily from 7,320 feet, the hole finished with a 5¾-inch oil string cemented through perforations at 5,232 feet. The Petroleum Co.'s No. 4 Beck started off like a world beater but water broke in and this 2,000-bbl. well was killed to permit the field department to undertake remedial measures. C. W. Fourl brought in a fairly good well when his No. 1 Long Beach was completed doing 694 bbls. of clean 29.2 gravity oil daily from 6,262 feet. The Continental Oil Co.'s No. 1 Denio was in about the same class as Fourl's new well as it showed an initial of 670 bbls. per day from 5,780 feet.

Ventura

Three new wells were finished in the Ventura Avenue Field, two of which, however, showed an excessive water content and may require further work. These were No. 23 Taylor of the Shell, which came in flowing 430 bbls. of 26.9 gravity oil daily from 6,403 feet, and No. 28 Gosnell of the same company, finished at 7,147 feet doing 600 bbls. of oil and 900,000 feet of wet gas daily. The former is cutting 20 per cent water and the latter 35 per cent. No. 36 Lloyd of the Associated, in contrast to the Shell's two completions, was exceptionally clean as the initial daily output, 1,492 bbls. of 29.5 gravity oil from 6,800 feet, shows only a trace. Although development work in the Ventura Avenue Field can not be classified as competitive drilling, the Associated, Shell and Pacific Western all have a relatively large number of wells scheduled for early completion. The Shell has 15 drilling projects on the Edison, Gosnell and Taylor leases which are nearing completion depths and several should be tanking oil within a few weeks. The Pacific Western Oil Co., which recently took over the holdings of the Petroleum Securities, has several potential producers scheduled for early completion on the Orton and Willett leases and a check indicates the Associated should also increase its list of producers in the near future.

Elwood

Production of the Elwood Field of Santa Barbara County, which was opened up by the Barnsdall Oil Co. pioneering on acreage tied up by the Rio Grande Oil Co., should continue its up trend again soon as No. 2 Doty is scheduled for completion within the next 10 days. Present production approximates 15,000 bbls. daily, 50 per cent of which belongs to the Barnsdall and the remaining one-half to the Rio Grande interests. The Standard has transported a considerable quantity of Elwood crude to its Richmond refinery, on San Francisco Bay, by utilizing its tanker fleet, and will undoubtedly continue to do so although the Rio Grande's expansion program in southern California tends to indicate this concern will use Elwood crude in the operation of its Vinvale refinery, near Los Angeles. The Barnsdall and Rio Grande have also undertaken an important expansion program in the Elwood Field involving the doubling of present storage facilities, increasing the absorption plant capacity and the building of a new 700-foot wharf out into the ocean to facilitate tanker loadings. No. 1 Elwood Acres, an outpost, in the extreme eastern part of the field, is being temporarily delayed with mechanical trouble. Several new wells are getting under way in the Elwood

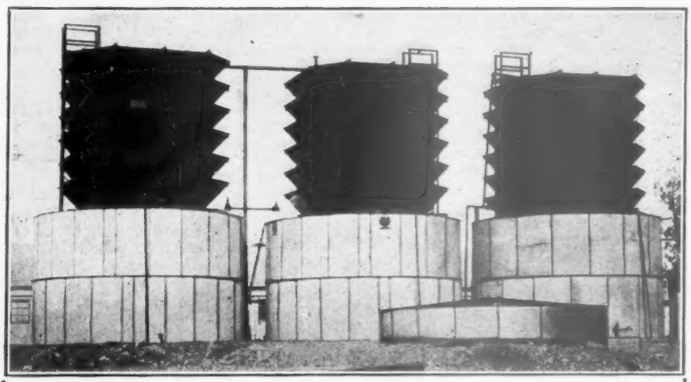
TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	2,988,419	9,828,534
Fuel oil	.....	.....	.....	.....	143,471	6,868,317
Diesel and gas oil	78,778	11,254	.....	.....	1,824,367	2,525,150
Gasoline	232,652	33,236	229,710	72,816	13,328,350	9,099,422
Tops	.....	.....	.....	.....	339,100	.....
Coastwise—						
Crude oil	693,588	99,084	494,303	70,615	23,001,091	23,080,340
Fuel oil	425,715	60,816	298,363	42,623	16,220,998	13,058,136
Diesel and gas oil	.....	.....	7,151	1,022	1,074,144	420,316
Gasoline	307,764	43,966	221,244	31,606	9,078,841	9,740,273
Kerosene	.....	.....	.....	.....	66,757	254,822
Tops	.....	.....	.....	.....	239,071	284,550
Exports—						
Crude oil	.....	.....	.....	.....	1,958,932	2,362,140
Fuel oil	191,353	27,336	380,822	54,407	20,931,333	27,595,424
Diesel and gas oil	55,211	7,887	42,750	6,107	2,131,899	1,409,301
Gasoline	.....	.....	208,281	29,754	6,979,094	5,613,970
Tops	.....	.....	.....	.....	.....	302,303
Kerosene	.....	.....	.....	.....	3,787,533	2,209,896

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC, GULF COAST PORTS

Diesel and gas oil	.....	.....	.....	.....	418,188	975,036
Gasoline	77,480	11,069	.....	.....	2,077,540	2,114,753
Lubricants	.....	.....	.....	.....	277,151	439,357
Coastwise—						
Fuel oil	209,800	64,257	77,620	11,089	3,350,275	4,794,292
Diesel and gas oil	.....	.....	.....	.....	279,197	254,413
Gasoline	115,442	16,492	35,118	5,017	4,582,094	4,856,401
Kerosene	.....	.....	.....	.....	224,643	219,120
Exports—						
Crude oil	.....	.....	.....	.....	96,250	.....
Fuel oil	62,383	8,912	46,617	6,660	2,222,314	2,754,620
Diesel and gas oil	.....	.....	.....	.....	56,180	119,729
Gasoline	.....	.....	.....	.....	4,012,706	2,762,288
Kerosene	.....	.....	92,546	13,221	718,523	947,295
Lubricants	.....	.....	.....	.....	33,535	61,408

KEYSTONE COPPER STEEL



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Field by a number of independent operators, although developments indicate the Barnsdall and Rio Grande control the total productive acreage. It may be possible a continuation of the Elwood anticline may subsequently be picked up as a result of this extensive exploration work.

Midway-Sunset

Although it has been several weeks since the Union Oil Co. found the new Western Petroleum oil zone in the Midway-Sunset area there have not yet been any further developments in this virgin horizon. The Union's discovery well, in Section 27-32-23, is being deepened following a test which was unsuccessful from a production standpoint because the hole caked over with heavy rotary drilling mud and prevented the movement of oil into the casing. The Italo Petroleum's drilling project in Section 26-32-23, west of the Union's No. 1 Western Petroleum, is being held up with mechanical trouble due to the loss of a bit at 2,390 feet. This well should encounter the Union horizon around the 2,500-foot level. The Cypress Petroleum, which is attempting to extend the Union's new sand northward is making good footage in its initial test in Section 22-32-23. The Standard has not yet spudded in its first project on the Mascot holdings in Section 26-32-23, work being concentrated on the building of new roads and the erection of a new steel derrick. The Republic Petroleum, which opened up a new deep sand in Section 8-32-23 several months ago, has just spudded in No. 33 and this new well should be tanking oil within 90 days as it is in proven territory about 400 feet west of No. 31, a satisfactory producer. No. 32, which failed to result in commercial production, was surveyed early in the week and the hole was found to have deviated from the vertical to a very appreciable extent.

Inglewood

The Standard Oil Co. finished a new well in the shallow zone at Inglewood and this project, No. 58 on Los Angeles Investment Lease No. 1, came in under a natural flow doing 794 bbls. of 22.6 gravity oil daily from an even 2,600 feet, the hole having been finished with an 8⅝-inch oil string carrying 1,150 feet of perforated. The Barnsdall Oil Co., which recently finished two large flowing wells in the deep zone at Rosecrans, has already started deepening No. 8 O'Dea and will begin work on No. 5-A Rosecrans, a new well, soon. The Union Oil Co. has also apparently decided to get some of the deep production as No. 10 Rosecrans was spudded in a few days ago and rotary equipment is being rigged up in No. 11. One new well was finished in the Huntington Beach Field, the Standard listing No. 40 Bolsa Chica as a 180-bbl. pumper from 4,437 feet following the failure to secure a natural flow. The Superior Oil Co. finished its No. 1 Pyne in the Richfield district of Los Angeles Basin and this new well came in doing 1,070 bbls. of clean 24.3 gravity oil and 600,000 feet of natural gas daily from 4,526 feet. The Continental should finish the next producer in this field as No. 1 Wynan and No. 2 Richfield are both nearing completion.

SOUTHWEST WILDCATS

(Continued from Page 49)

Hicks & Hicks, Perdernal Grant, 150 feet to northeast lints and 200 feet to southeast lines, is moving on.

Webb County

Edouard Raymond's No. 1 Schmellzer, Share 2, Galan Grant, Brewster Pasture, is moving on. G. S. Lumpkin's No. 1 H. Yeager, Porcion 33-34-35, Block 17, located 1,170 feet to east line and 150 feet to south line is location.

Zapata County

National Oil Co.'s No. 1 Don B. Adams, Share 8, Section 11, Block 4, center of north half, has derrick up. R. V. Hill's No. 4 Ramirez, Survey 627, located 785 feet to northeast lines and 450 feet to northwest lines, is standing at 713 feet.

Bexar County

Crouch and others are making location half-mile south of Adkins. Dingman Oil Co.'s No. 1 Feldman, William Small Survey, 151 feet to north line and 1,260 fe to east line, near Brooksfield, is drilling Dixie Oil Co.'s No. 1 Medina Irrigatio Co., 1,666 feet to north line and 470 fe to west line, is shut down. George P Hinton is making location 2 miles sout of Gas Ridge. William M. Morgan's No. E. S. Bridge, 8 miles southeast of San Antonio, is moving in derrick. H. J Moore's No. 1 Holly R. Ellison, T. You Survey, 2,916 feet to east line and 1,50 feet to south line, is moving in rig.

Bastrop County

Billy Mayfield's No. 2 McColl, Stephe F. Austin Survey, 50 yards west of No. 1 is on rock at 575 feet.

Caldwell County

Fred Adams' No. 1 Burney, Gideo Pace Survey, is in Edwards at 2,802 fe with sulphur water and shut down. John V. Edwards' No. 1 W. C. Caldwell, Co nelius Crenshaw Survey, 600 feet t south line and 300 feet to east line, is i chalk at 1,570 feet. Gulf Productio Co.'s No. 1 Reed, S. Seale Survey, is loca tion west central.

Calhoun County

B. F. Thompson's No. 1 Thomas, John P. Tully Survey, 910 varas to north lin 530 feet west of north corner of John C Post Survey, is drilling at 2,290 feet i stiff (brown) gumbo.

Colorado County

National Oil Co.'s No. 1 H. T. Brandt Freeman Pettus League, 150 feet to south line and 1,000 feet west of highway, i location.

Edwards County

McMann Oil & Gas Co.'s No. B-1 Walter Schreiner, HE&WT Ry. Survey, Section 50, Block F, 330 feet to south and east lines, is drilling at 3,880 feet. Gai Oil Co.'s No. 1 Neal Jergin, GC&SF Ry. Survey No. 2, located 1,000 feet to north line and 740 feet to east line, is drilling at 2,700 feet.

Frio County

Austin Johnson and others' No. 1 Schenburg, E. Gallagher Survey, No. 70 is location 1,250 feet to east line and 1,625 feet to south line. Pilgrim Oil Co.'s No. 2 Blackaller, James Gouley Survey, is standing at 3,218 feet.

Fayette County

Marshall & Moore's No. 1 John A. Kerr, M. Muldoon League No. 5, about 250 varas to north line and little west of center, is shut down at 2,078 feet. National Oil Co.'s No. 1 J. C. Melcher, S. M. Williams League No. 1, located 300 feet to north and east lines, is rigged up. R. E. Phalon's No. 1 Cervenkz, Fayette County school lands, is drilling at 2,700 feet.

Goliad County

J. E. Alexander's No. 1 Campbell, Goliad Survey, Block 7, located 315 feet to north line and 327 feet to east line, is drilling at 1,000 feet. Southern Crude Oil Purchasing Co.'s No. 1 J. E. Pettus near Cabeza Creek, is at 3,001 feet, contract depth, and dry and is waiting on orders, probably will deepen.

Guadalupe County

Pat Armstrong's No. 1 Halm, Wakefield Survey, has derrick up. G. A. Greene (Brodie and others) No. 1 B. F. Dix, Ira Nash Survey, 610 feet to north of road and 320 feet to east line, has resumed drilling at 28 feet. J. J. Christie No. 1 Taylor Thomas, G. Chotwell Survey, 1,100 feet to southwest lines and 1,130 feet to southeast lines, is drilling at 967 feet. Magnolia Petroleum Co.'s No. 1 C. H. Adams, J. Randolph Survey, 150 feet to southwest and southeast lines, is drilling at 2,910 feet. Miller Brothers No. 1 Gib Springs, E. Cortari Survey, 450 feet to west line and 775 feet to south line, is drilling at 800 feet.

Hays County

Estess-Moore & King's No. 1 C. N. Sledge, Hunton & Jones Survey, 285 feet to northwest lines, is shut down at 900 feet.

Jackson County

J. B. Douglas' No. 1 C. O. Lowrance, John McHenry Survey, 720 varas to northwest lines and 3,700 varas to southwest lines, is shut down at 3,020 feet. The Texas Company's No. 1 W. C. Moore, I&GN Survey No. 208, located 5,108 feet to south line and 150 feet to west line, is drilling at 2,820 feet. Wright Brothers No. 2 Classen is sidetracking at 3,170

feet; No. 6 Drushell, an old well, is being deepened to 3,500 feet.

Kinney County

Mardon Oil Co.'s No. 1 Jim Clamp, Survey 346, Section 1492, located 5,360 feet to west line and 5,675 feet to south line, at 2,120 feet, about one foot in Edwards is fishing for drill stem.

Maverick County

Ryan Consolidated Petroleum Corp.'s No. 2 Indio Ranch, A. Rivas Survey, Section 7, NE cor., is drilling at 1,175 feet. Rycade Oil Corp.'s No. 3 Chittim, Section 116, Block 7, located 10 feet to west line and 255 feet to south line, is rigging up; No. 3 Sullivan, Section 71, Block 7, located 520 feet to west line and 2,137 feet to south line, is drilling at 4,695 feet; No. 2 Chittim, Section 158, Block 7, located 350 feet to north and east lines, is cleaning out at 7,635 feet.

Medina County

California-Medina No. 1 Rothe, Survey 1012, is fishing at 3,278 feet. Carl G. Cromwell's No. 1 Taylor, Section 135, Block 28, located 210 feet to north line and 155 feet to east line, is shut down at 850 feet. Donaldson Oil Development Co.'s No. 1 Adams, Survey 25, located 150 feet to east line and 1,227 feet to south line, is drilling a 1,400 feet. Ferguson and others' No. 2 Odom, H. Castro Survey, is drilling at 200 feet. Holt & Cromwell's No. 1 Mott, Survey 1,267, is shut down at 512 feet. North & South Development Co.'s No. 1 Charles Nehr, Survey 441, located 150 feet to south line and 7,479 feet to east line, is drilling at 2,540 feet in Glenrose. Richardson's No. 2 Bende'e, 75 feet north of No. 1, is down 900 feet. Cecil Switzer's No. 2 Zerr is skidding rig from the No. 1.

McMullen County

J. F. Locke's No. 1 Genser, J. T. Robbins Survey, is location in west central part.

Nueces County

Nueces River Basin Development Co.'s No. 1 Allen, G. Farrier Survey, 1,596 feet to south line and 474 feet to west line, is shut down for holidays.

Refugio County

Blanco Creek Oil Co.'s No. 1 St. John, J. Scott Survey, 708 feet to northwest lines and 3,074 feet to northeast lines, 6 miles northwest of gas field, is drilling at 300 feet. Dunlap & Wilkinson's No. 1 Rooke, 10 miles south of the field, is standing at 2,750 feet. Davis & Horn's No. 1 Howard, Section 8, is drilling at 1,500 feet. Magnolia Petroleum Co.'s No. 1 Glenewinkle, J. Scott Survey, 330 feet to south and east lines, is rigging up.

Travis County

Flynn Brothers' No. 1 St. Edwards University is drilling with spudding machine.

Victoria County

Houston Oil Co.'s No. 3 McFaddin is location for a deep test; No. 2 Dr. Allen Kyle has been spudded in. Humble Oil & Refining Co.'s No. 1 R. B. Roos, near Nursery, is drilling.

SOUTHWEST TEXAS

(Continued from Page 49)

to west line and 750 feet to south line, is drilling at 3,798 feet; No. 14 Yeager-Strohman, Share 5, located 900 feet to north line and 575 feet to east line, has derrick up; No. 15 Yeager-Strohman, Share 5, located 1,400 feet to north line and 575 feet to east line, has derrick up. Rycade Oil Corp.'s No. 6 Yeager-Strohman, Share 5, located 1,350 feet to north line and 150 feet to east line, has sand at 2,160-70 feet and set casing at 2,152 feet; No. 7 Yeager-Strohman, Share 5, located 1,650 feet to north line and 150 feet to east line, has sand at 2,157-63 feet and set casing at 2,152 feet.

Aviator or Bruni Tracts

G. C. Salley's No. 1 Puig, Carter-Pinkton tract of Puig ranch, Albercas grant, 220 feet to west line and 150 feet to south line, is rigged up and standing. The Texas Company's No. 1 Bruni, Block 74, is drilling at 250 feet.

Carolina-Texas Field

C. R. Miller's (Miller-Daniels) No. 1 de la Garza, Survey 48, Block 47, located 150 feet to north and east lines, is retesting sand at 2,119-22 feet after plugging off bottom. W. R. Shankle's No. 1 Webster, NE SE Survey 684, located 150 feet to south and west lines, is drilling at 1,000 feet, 10-inch casing set at 43 feet. Foster Barnsley's (Barnsley and others) No. 1 Webster, NE SW Survey 684, located 510 feet to north line and 150 feet to east line, is drilling at 1,150 feet, with 10-inch casing set at 55 feet. Barnsley-Scharf & Kirk's No. 2 de la Garza, Survey 335, Block 21, located 200 feet to north line and 150 feet to east line, is drilling at 350 feet with 10-inch casing set at 60 feet.

Andrews Field

Cosden & Danmier's No. 1 P. Benavides, Survey 11, Block 6, located 150 feet to northeast lines and 350 feet to southeast lines, has derrick up.

Magnolia-Cole Field

Houston Oil Co.'s No. 4-D Benavides, Survey 753, Block 13, located 160 feet to south line and 822.5 feet to east line, is location; No. 17-D Benavides, Survey 753, Block 5, is location 160 feet to south and west lines. Magnolia Petroleum Co.'s No. 1 Benavides, SE SW Survey 660, is location 150 feet to south and west lines; No. 1 Benavides, Survey 697, Block 10, is location 150 feet to north and east lines.

Cole Petroleum Co.'s No. 66 Benavides, Survey 412, Block 4, located 631 feet to east line and 160 feet to north line, is drilling at 40 feet. Houston Gulf Gas Co.'s No. 1 S. Benavides, Survey 693, located 1,470 feet to south line and 150 feet to west line, in sand at 2,298-99 feet showed some gas, but lost seat and is running tester again.

Cole Gas Field

O. W. Killam's No. 1 Bruni, Survey 9, located 1,700 feet to northwest lines and 700 feet to northeast lines, is moving on. J. G. Mackay's No. 2 Richardson, Survey 5, is location 160 feet to north and west lines.

Jennings Field—Zapata

O. W. Killam's No. 8 Cuellar, Cerrito Blanco grant, has sand at 1,456 feet; No. 9 Cuellar, same grant, 643 feet to southwest lines and 703 feet to southeast lines, is drilling at 1,150 feet. Charles L. McCaslin's No. 1 R. Cuellar, Survey 278, located 3,260 feet to east line and 3,578 feet to north line, is rigging up; No. 1 R. Hinnant, Survey 74, located 2,390 feet to west line and 630 feet to south line, has derrick up. South Texas Production Co.'s No. 2 Jennings, Cerrito Blanco grant, 8,575 feet to southeast lines and 9,190 feet to southwest lines, has sand at 1,428-35 feet, casing set at 1,428 feet.

Charco Redondo Field

W. R. Duke's No. 3 Martinez, Block 22, located 1,300 feet to northwest lines and 840 feet to northeast lines, is moving on.

Mirando Valley Pool

O. W. Killam's (W. L. Conway) No. 1 R. Lopez, Survey 113, Block 5, located 250 feet to west line and 340 feet to north line, is drilling at 900 feet.

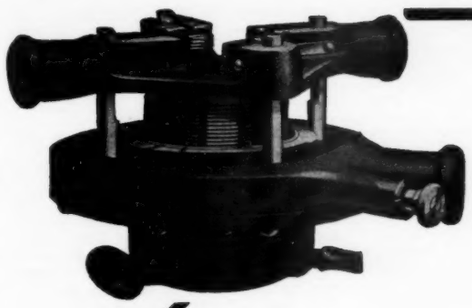
Yost Field—Bastrop

Amerada Petroleum Corp.'s No. 1-A Yost, A. Garcia Survey, 600 feet east of discovery well, is at 1,767 feet, plugging back and waiting to make test. Atlantic Oil Producing Co.'s No. 1 Yost, A. Garcia Survey, 600 feet west of discovery well, is drilling at 1,358 feet. Judge Batts' No. 1 White, 2 miles northwest of discovery well, has spudded in and set surface casing. Cranfill & Reynolds' No. 3 Yost, A. Garcia Survey, 300 feet southwest of No. 1, has set casing to test; No. 4 Yost, A. Garcia Survey, is rigging up. The Texas Company's No. 1 A. Yost, A. Garcia Survey, 450 feet to southwest lines and 150 feet to northwest lines, has derrick up.

Joe Bruner Field—Caldwell

Pat Armstrong's No. 1 E. Martin, A. Floyd Survey, 150 feet to northeast lines and 410 feet to southeast lines, at 2,850 feet plugged back from 3,050 feet and is standing. J. S. Abercrombie Oil Co.'s No. 2 Lida Moses, A. Floyd Survey, 450 feet to west line and 150 feet to north line, is drilling in at 2,733 feet; No. 3 Lida Moses, A. Floyd Survey, 150 feet to north and east lines, is drilling at 2,713 feet in Edwards; No. 4 Lida Moses, A. Floyd Survey, 150 feet to south and west lines, is in chalk at 2,486 feet.

Brawn and others' (Chief Miller) No.



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1 R. W. Carter, Gerren Hinds Survey, 150 feet to south and west lines, at 2,607 feet is in Georgetown topped at 2,560 feet and has set casing. Cranfill & Reynolds' No. 3 S. Smith, A. Floyd Survey, 150 feet to south and east lines, is drilling at 2,687 feet in the Georgetown. D. F. Bryan's No. 1 Davis, G. Hinds Survey, is location.

Golden West Oil Co.'s No. 1 Malone, A. Floyd Survey, 150 feet to northeast and northwest lines, encountered gas at 1,100 feet and has set and cemented casing at 982 feet to complete; No. 1 Cook, A. Floyd Survey, 480 feet to northeast lines and 170 feet to northwest lines, is drilling in at 2,701 feet; No. 1 Wilson, A. Floyd Survey, 150 feet to northwest and southwest lines, is drilling at 2,661 feet in Georgetown; No. 5 Wilson, A. Floyd Survey, 210 feet to northwest lines and 150 feet to southwest lines, is location; No. 6 Wilson, A. Floyd Survey, 300 feet southeast of No. 3, is drilling at 2,680 feet.

Gulf Production Co.'s No. 1 Smith, A. Floyd Survey, 150 feet to south and east lines, is drilling at 2,400 feet in chalk; No. 1 J. J. Davis, A. Floyd Survey, 150 feet to northwest and southwest lines, at 2,743 feet plugged back to shut out water and is being put on the pump; No. 1 Connally, A. Floyd Survey, 150 feet to south and west lines, is drilling at 2,264 feet in top of chalk (formerly V. West); No. 2 Connally, A. Floyd Survey, 150 feet to north and west lines, is swabbing at 2,734 feet; No. 3 Connally, A. Floyd Survey, 150 feet to CNL, is swabbing at 2,705 feet; No. 4 Connally, A. Floyd Survey, 150 feet to north and east lines, is drilling at 2,683 feet in dobie; No. 5 Connally, A. Floyd Survey, 150 feet to CSL, is drilling at 2,612 feet in Del Rio. Guerrin & Gastor's No. 1 Davilla, Isaac Weldon Survey, is location in SE cor.

Humble Oil & Refining Co.'s No. 1 W. W. Hickman, Gerren Hinds Survey, 150 feet to north and east lines, has derrick up; No. 1 T. B. Johnson, James Hinds Survey, center of tract, is coring at 2,600 feet in Georgetown; No. 1 William Smith, A. Floyd Survey, 150 feet to south and west lines, at 2,683 feet in Edwards filled 240 feet to fluid in 45 minutes, 150 feet oil, remainder water, and has set casing. M. S. Holladay's (J. T. Barlow) No. 1 Bouldin is standing at 3,070 feet. J. B. Jarmon's No. 1 Carter, G. Hinds Survey, is location in center of tract.

C. E. Lange's No. 1 Kate Colding, A. Floyd Survey, 150 feet to northwest lines and 112 feet to northeast lines, has set 10-inch surface casing. Lutex Oil, Inc.'s, No. 1 Wilson topped Edwards at 2,718 feet and is drilling at 2,723 feet; No. 5 Davis, A. Floyd Survey, offset to Carl Brothers-Suttle's No. 1 Malone, is drilling at 2,308 feet. Linderman and Atlantic's No. 1-A W. F. Davis, A. Floyd Survey, 150 feet to northwest and northeast lines, is bailing at 2,730 feet. H. C. Ratcliff and others' No. 1 Cora Malone, A. Floyd Survey, 150 feet to north and west lines, is standing at 2,694 feet.

Shell Petroleum Corp.'s No. 1 R. W. Carter, Gerren Hinds Survey, 150 feet to north and west lines, has set casing at 2,210 feet, total depth 2,625 feet; No. 4 W. L. Smith, A. Floyd Survey, 150 feet to south and west lines, is drilling at 2,540 feet in Del Rio; No. 1 J. Smith, A. Floyd Survey, 150 feet to north and east lines, is drilling at 2,710 feet in Edwards topped at 2,704 feet.

Sun Oil Co.'s No. 3 Malone, A. Floyd Survey, 750 feet to northwest lines and 150 feet to northeast lines, at 2,732 feet is swabbing 1,260 feet of oil in hole; No. 4 Malone, A. Floyd Survey, 1,033 feet to northwest lines and 150 feet to northeast lines, is drilling at 2,286 feet in Taylor marl. The Texas Company's No. 1 M. Merriweather, A. Floyd Survey, 150 feet to northeast lines and 500 feet to southeast lines, is drilling in at 2,816 feet, total depth; No. 3 Merriweather has derrick up; No. 4 Merriweather is location; No. 5 Merriweather is location in A. Floyd Survey, 150 feet to northwest and northeast lines.

M. K. Towns' No. 2 W. W. Hickman, Gerren Hinds Survey, 150 feet to north and west lines, at 2,701 feet is reaming to set casing; No. 3 W. W. Hickman, A. Floyd Survey, 150 feet to CWL, is drilling at 2,441 feet. Turman & Brown's No. 1 City of Luling, A. Floyd Survey, 150 feet to northeast and southwest lines, is at 2,760 feet.

Lockhart Field

Pat Armstrong's No. 1 Heidenheimer, John R. Miller Survey, 450 feet to north line and 150 feet to east line, is building derrick. Neumann & McIntire's No. 1 J. O. Patton, John R. Miller Survey, 150 feet to north and west lines, has derrick up and is moving on. The Texas Company's No. 2-B Branyon, John R. Miller Survey, 1,580 feet to west line and 150 feet to south line, is skidding rig over from No. 1-B, lost at 2,206 feet.

Sullivan Field—Gonzales

Cranfill & Reynolds' No. 1 J. F. Webb, Winslow Turner Survey, east offset to discovery well, is moving in rig.

Luling Field—Guadalupe

A. B. A. Oil Co.'s No. 4 Britton Harris is shut down at 1,250 feet for repairs. Magnolia Petroleum Co.'s No. 2-B McKean, Harriett Cottle Survey, 150 feet to northwest and southwest lines, is drilling at 2,123 feet.

Kingsville Field—Kleberg

Humble Oil & Refining Co.'s No. 4 Flato, Survey 40, Block 10, located 250 feet to east line and 450 feet to north line, is drilling at 3,654 feet.

Cartwright Field—Live Oak

Houston Oil Co.'s No. 1-A Brown Land & Cattle Co., M. B. Kivlin grant, is location.

Three Rivers Field

W. J. Walton's No. 3 C. H. Wedding, 300 feet west of No. 2, is expected to be deepened.

Agua Dulce Field—Nueces

Alexander & Smith's No. 1 Bowers, Section 47, Ruchard King Subdivision, 150 feet to south line and 265 feet east of center, at 2,503 feet is dry and standing, having reached contract depth. Davis-Horn and others' No. 1 Thomas Ragland, Manton & Briggs Subdivision, Lot 13, SW cor., is standing at 416 feet. R. & G. Corp.'s No. 1 Ed Allen, Section 6, Ross Peters Subdivision, is drilling at 3,680 feet.

Refugio Field—Refugio

Benedum & Trees' No. 3 Claude Heard, 300 feet south of No. 1, at 3,687 feet does not flow but is making some oil and water. Houston Oil Co.'s No. 4 Wilson Heard, at 3,700 feet is flowing 200 bbls. oil and some water. Houston Gulf Gas Co.'s No. 2 Shelly has set casing at 3,649 feet; No. 1 Fox is washing down to deepen; No. 3 Fox, Lot 4, Block 5 at 3,300 feet has rebuilt derrick and going back in to deepen; No. 7 James Agnes Lambert is drilling at 3,900 feet; No. 3 Rea, Block 5, has set casing at 3,475 feet.

William F. Morgan's No. 2 James Agnes Lambert at 3,407-14 feet cored a water sand. Saxet Gas Co.'s No. 5 Claude Heard, 300 feet south of No. 4, and offsetting Benedum & Trees' No. 3 Heard, is drilling at 1,600 feet. Union Exploration Co.'s No. 1 Holmes Heard, Tract 3, Block 8, is set and cemented casing at 340 feet and resumed drilling; No. 1 Leslie Adkins, Block 8, located 150 feet to south and east lines, is drilling at 1,900 feet.

West Field—Zavala

Tritex Oil Co.'s No. 1 Clay Burns, 2 miles northwest of West ranch, is location; No. 4 West has been spudded in; No. 1 Childress is location in townsite of La Pryor.

COMPLETIONS

Bastrop County

Cranfill & Reynolds' No. 3 A. Yost, in the new Yost Field near Cedar Creek, has been completed at 1,394-1,418 feet swabbing 50 bbls.

Atlantic Oil Producing Co.'s No. 1 Yost in A. Garcia Survey, also in the Yost Field 500 feet west of discovery well, at 1,360 feet topped pay and made 300 bbls.

Amerada Petroleum Corp.'s No. 1 Yost, 600 feet east of discovery well in Yost Field, at 1,767 feet has been abandoned dry, after plugging back failed to make a well.

Caldwell County

Gulf Production Co.'s No. 4 Connally, Joe Bruner (Salt Flats) Field in Caldwell County, A Floyd Survey, completed at 2,683-2,704 feet, swabbed 72 bbls. first hour.

Gulf Production Co.'s No. 3 Connally in same field and survey completed at 2,686-2,705 feet for 900 bbls.

Gulf Production Co.'s No. 2 Connally in same field and survey has been completed at 2,717-43 feet for 500 bbls.

Magnolia Petroleum Co.'s No. A-5 R. Rios in the Luling Field has been completed an average well of the field.

Duval County

Onyx Oil Co.'s No. 2 Krauter, Survey 250, Block 20, Schoolfield & O'Byrne Field, completed at 2,348 feet made 75 bbls.

Refugio County

Benedum & Trees' No. 3 Claude Heard, 300 feet south of No. 1 Heard, discovery oil well in southern end of field, at 3,687 feet does not flow but is making some oil and water.

Houston Oil Co.'s No. 4 Wilson Heard, completed at 3,700 feet, is flowing 200 bbls oil and some water.

San Patricio County

Saxet Gas Co. has completed well on White Point Development Co., a big gas well for the field.

Webb County

Rycade Oil Corp.'s No. 7 Yeager-Strohman in Share 5 of the Albercas Field at 2,165 feet is making 600 bbls.

Rycade Oil Corp.'s No. 6 Yeager-Strohman in same share and field completed at 2,170 feet is flowing 900 bbls.

Sun Oil Co.'s No. A-9 Yeaker-Strohman, Share 5, same field, completed at 2,167 feet is good for 300 bbls.

Zapata County

South Texas Production Co.'s No. 2 Jennings in Jennings Field, Cerrito Blanco Grant, completed at 1,435 feet is making 10,000,000 feet of gas daily.

O. W. Killam's No. 1 R. Lopez, Surgrant and field, completed at 1,461 feet for 100 bbls. daily.

ABANDONED TESTS

Goliad County

J. E. Alexander's No. 1 Campbell in Goliad Survey, Block 7, has been abandoned at 1,042 feet.

McCarson and others have abandoned No. 1 Broyles in the Goliad Townsite as a dry hole.

Victoria County

Houston Oil Co.'s No. 2 McFaddin, J. G. Smalley Survey, has been abandoned dry.

Webb County

O. W. Killam's No. 32 Bruni, Survey 57, Albercas Field, is dry and abandoned at 2,332 feet.

Jim Hogg County

T. J. Conway's No. 1 Palacios, Survey 232, Block 6, has been abandoned dry at 2,317 feet.

Zapata County

O. W. Killam's No. 1 R. Lopez, Survey 113, Block 5, Mirando Valley Field lost hole at 1,440 feet, has abandoned test and has skidded rig few feet to start another test.

NEW LOCATIONS MADE

Bastrop County

E. B. Germany's No. 1 Stork, H. Stewart Survey, is location 150 feet to north and east lines.

Bexar County

Amelia Balgart's No. 1 Adams, Cortari Survey No. 5, is location in NW cor.

Caldwell County

Shell Petroleum Corp.'s No. 1 William Moses is drilling at 460 feet in the Bruner Field.

Shell Petroleum Corp.'s No. 2 William Moses, same field, is location.

Shell Petroleum Corp.'s No. 1 Floyd Tiller, same field, has set 12½-inch surface casing at 60 feet.

Shell Petroleum Corp.'s No. 5 William Smith, A. Floyd Survey, same field, is down 810 feet.

Humble Oil & Refining Co.'s No. 2 Floyd Tiller, Bruner Field, is location.

Humble Oil & Refining Co.'s No. 1 J. J. Davis, A. Floyd Survey, Bruner Field, is location.

Humble Oil & Refining Co.'s No. 2 J. J. Davis, same survey and field, is location.

Humble Oil & Refining Co.'s No. 1 J. B. Tiller, same field and survey, is drilling at 1,710 feet.

Humble Oil & Refining Co.'s No. 2 J. B. Tiller, same field and survey, is drilling at 480 feet.

Humble Oil & Refining Co.'s No. 1 William Smith, A. Floyd Survey, same field, is drilling at 1,772 feet.

Humble Oil & Refining Co.'s No. 2 W. F. Davis, is drilling at 2,438 feet in same field.

Abercrombie Oil Co.'s No. 5 Lida Moses, A. Floyd Survey, is drilling at 255 feet.

C. E. Lange's No. 1 W. P. Walker, G. Hinds Survey, 150 feet to north and west lines, is drilling at 1,584 feet.

C. E. Lange's No. 2 W. P. Walker, G. Hinds Survey, 150 feet to west line and 214 feet to south line, is drilling at 1,500 feet.

The Texas ompany's No. 1 Moses, G. Hinds Survey, is location 150 feet east of center of west line.

Gulf Production Co.'s No. 2 Smith, 300 feet north of No. 1, is location.

Gulf Production Co.'s No. 3 Smith is location 300 feet north of No. 2.

Gulf Production Co.'s No. 4 Smith, is location 300 feet north of No. 3.

Gulf Production Co.'s No. 5 Smith, is location 300 feet north of No. 4.

Gulf Production Co.'s No. 6 Smith, is location 300 feet north of No. 5.

Gulf Production Co.'s No. 7 Smith, is location 300 feet north of No. 6.

Duval County

Onyx Oil Co.'s No. 3 Krauter, Survey 250, Block 20, located 450 feet to north line and 150 feet to east line, has derrick up.

S. & O. Oil Co.'s No. 2 Bowe, Survey 250, Block 21, located 220 feet to east line and 660 feet to south line, has derrick up.

Goliad County

J. E. Alexander's No. 1 Bergman, Goliad Survey, Block 30, located 250 feet to west line and 950 feet to south line, is drilling at 500 feet.

McCarson and others' No. 1 Flake in Goliad Townsite is rigging up.

Medina County

Lynch andothers' No. 1 Mott, is drilling at 300 feet.

Refugio County

Houston Gulf Gas Co.'s No. 1 J. M. O'Brien, O'Brien Survey No. 4, is location in south central part.

Webb County

Rycade Oil Corp.'s No. 8 Yeager-Strohman, Share 5, located 1,950 feet to north line and 150 feet to east line, is rigging up.

Rycade Oil Corp.'s No. 9 Yeager-Strohman, Share 5, located 2,250 feet to north line and 150 feet to east line, has been spudded in.

Simms Oil Co.'s No. 3 Dinn, Survey 62, Simms tract, 60 feet to north and east lines, has been spudded in.

Zapata County

South Texas Production Co.'s No. 1 Jennings, Cerrito Blanco Grant, is location.

LA.-ARK. WILDCATS

(Continued from Page 46)

and others) have a location in Section 17-19-14, Caddo Parish, on the Hunter estate lands about 10 miles north of Shreveport in the Blanchard district, where Gulf Refining Co. recently drilled to 4,564 feet and where D. C. Richardson, Sr., also was active shortly before his death. R. O. Roy drilled No. 1 Whitaker in Section 5-13-13, DeSoto Parish, 20 feet beyond where it had been shut down and tested salt water at 2,884 feet and shut down again. This well was dry at 2,500 feet but when his well on the Fuller land in Section 6-13-13 came in with 20,000,000 feet of gas from 2,827 feet he deepened the Whitaker which was dry again at 2,778 feet and got a small show of gas at 2,834 feet but not enough to make a well.

Arkansas Wildcats

In Arkansas most of the wildcats are shut down and of those active McDonald Brothers' No. 1 Wilson in Section 25-15-18, Ouachita County, was the only one at an interesting stage. Drilling at 2,700 feet on the second hole 50 feet north of the first which was junked, this test is nearing the depth where the original hole developed a considerable show of heavy

oil in 6 feet of sand, total depth 2,827 feet. Bell and others made location for No. 1 Terrell in the NE cor. NE NW Section 27-18-14, and have rig up. Location is about 10 miles south of Champagnolle and 8 miles east of El Dorado production. J. E. Crosbie who has a well on the sand in Smackover waiting for standard rig and is drilling No. 1 Canada, a semiwildcat on the north edge of Smackover in Section 24-15-16, made location for No. 2 on the same lease in the SE cor. NW SW same section, across the "forty" from No. 1.

Only one wildcat completion was listed during the week, Starke and others' No. 1 Powell in Section 35-18-15, 2 miles east of El Dorado South field production, which tested salt water at 3,512 feet. A previous test of 7 feet of sand at 2,955-62 feet also was salt water.

North Louisiana

Bienville Parish

W. G. Gray and others' No. 1 Johnson, Section 21-18-6, is drilling chalk rock at 2,530 feet. W. P. Wallace and others' No. 1 Ashley, Section 15-16-10, is drilling at 1,850 feet.

Bossier Parish

Arkansas Natural Gas Corp. has rig up for No. 1 Tidwell, 330 feet west of the SE cor. SE NE, Section 29-22-11.

Caddo Parish

D. C. R. Oil Co. has location for No. 1 Hunter estate, in Section 17-19-14, 10 miles north of Shreveport. Woodley Petroleum Co. cemented 6-inch casing at 2,425 feet on No. 3 Whitehurst in Section 34-26-12.

Claiborne Parish

Dixie Oil Co.'s No. 1 Hilbert, Section 27-21-5, tested salt water at 4,326 feet and is coring at 4,347 feet. El Dorado Chief Oil Co.'s No. 1 Baker, Section 26-20-7, is shut down at 2,092 feet for repairs to rig.

DeSoto Parish

Benedum & Trees' No. 1 State, Section 22-14-12, is shut down at 2,633 feet. R. O. Roy tested salt water at 2,888 feet in No. 1 Whitaker, Section 5-13-13, and shut down. Thorn Oil Co.'s No. 1 Burford, Section 22-14-14, cemented 12½-inch at 160 feet. Warren & Carruthers shut down No. 1 Ramsey, Section 33-13-16, at 2,325 feet.

East Carroll Parish

Palmer Corp.'s No. 1 Mitchner, Section 8-19-11, cemented 8-inch at 878 feet.

Monroe District

Morehouse Parish—Woodley & Collins made location in the SW cor. NW SW, Section 23-22-7, for No. 1 Harp.

Ouachita Parish — Phillips Petroleum Co. is drilling No. 1 School fee, Section 16-16-4, at 2,510 feet.

Richland Parish

Richland Operating Co. cemented 12-inch surface pipe at 185 feet on No. 1 Chapman, Section 19-16-7.

Sabine Parish

W. J. Garnier, trustee, is drilling No. 1 Bowman-Hicks, Section 16-7-12, at 700 feet.

Arkansas

Ashley County

J. G. Marcum and others shut down No. 1 DeYampert, Section 5-19-4, at 2,672 feet. The Texas Company's No. 1 Kiefer, Section 11-18-4, has rig up ready to drill.

Bradley County

Ohio Oil Co.'s No. 1 Southern Lumber Co., Section 19-16-9, is drilling at 1,730 feet.

Garland County

H. H. Givens and others got the junk out of No. 1 Garrett, Section 1-3-19, and is reaming to set 6-inch at 2,950 feet, total depth 3,000 feet.

Logan County

Arkansas Natural Gas Corp.'s No. 1 Parks, Section 26-8-24, is underreaming at 2,605 feet, total depth 3,203 feet.

Miller County

E. A. Martin's No. 4 Dale, Section 23-15-26, is drilling at 2,500 feet.

Ouachita County

J. E. Crosbie's No. 1 Canada, Section 24-15-16, cemented 10-inch at 45 feet and is drilling at 1,170 feet; No. 2 is a location 250 feet west and 300 feet north SE cor. NW SW, same section. McDonald Brothers are drilling at 2,705 feet on No. 1 Wilson, second hole, Section 25-15-18.

Union County

Bell and others made location in the NE cor. NE NW, Section 27-18-14, for No. 1 Terrell. Magna Production Co.'s No. 2 El Dorado Realty Co., Section 8-17-13, is drilling at 2,990 feet.

LOUISIANA-ARKANSAS

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feet. Magnolia Petroleum Co. is drilling shale at 1,709 feet on No. 4 Ira Cox, Section 23-21-10, and at 3,090 feet on No. 1 McCook & Hibbler, Section 22-21-10. Ohio Oil Co. is bailing No. 42 Bodcaw, Section 27-21-10, for a test at 4,641 feet. Palmer Corp.'s No. 4 Tillman, Section 28-21-10, is drilling at 4,378 feet.

Sarepta and Shongaloo—Bob Elmore cemented 6-inch at 2,605 feet on No. 1 Mitchell, Section 31-23-9. Magnolia Petroleum Co. cemented 8⅛-inch casing at 2,679 feet on No. 1 H. M. Branton, Section 5-22-9; No. 1 Scroggins, Section 1-22-11, is bailing oil and salt water from 2,709 feet. Northwest Louisiana Gas Co. cemented 6-inch casing at 2,694 feet on No. 9 Pine Woods, Section 34-23-11.

Arkansas

Johnson County

Arkansas Natural Gas Co. has begun drilling No. 1 McPherson, 660 feet north and 760 feet west SE cor. SE SE, Section 10-10-24, and has rig up for No. 2 Bynum in Section 12-10-24.

Nevada County

Humble Oil & Refining Co. cemented 6⅝-inch casing at 1,153 feet on No. 1-D Groves, Section 6-14-20, and 12½-inch at 1,169 feet on No. 1 Hain, Section 1-14-21.

Ouachita County

Smackover—Phillips Petroleum Co. set 54 feet of 10-inch on No. 7 Johnson, Section 34-15-15, and is drilling at 1,200 feet, and Simms Oil Co. is rigging up with cable tools for a fishing job at 2,749 feet on No. 11 Hildebrandt, Section 33-15-15.

Union County

Champagnolle — J. W. Hooser shut down No. 4 Slade, Section 3-17-14, at 2,325 feet. H. L. Hunt is bailing No. 3 Gregory, Section 10-17-14, for a test at 3,259 feet; No. 6 Gregory, Section 15-17-14, set 10-inch at 160 feet and is drilling at 2,427 feet. Lion Oil Refining Co.'s No. 2 Nash, Section 6-17-13, set 6⅝-inch at 3,033 feet to test 15 feet of broken sand, total depth 3,048 feet; No. 5 Union Sawmill, Section 7-17-13, is drill stem testing 7 feet of sandy shale at 3,276-83 feet. Marine Oil Co.'s No. 2 Sample, Section 7-17-13, is drilling at 1,720 feet. Ohio Oil Co. set 6⅝-inch at 3,047 feet on No. 2 Alphin, Section 7-17-13, to test with the bottom at 3,049 feet in 2 feet of sand; No. 3 Carroll heirs, Section 6-17-13, set 10-inch at 187 feet and got the drill stem stuck at 600 feet; No. 4 Nash, Account 1, Section 6-17-13, is drilling at 2,605 feet; No. 1 Nash, Account 3, same section, is fishing for drill stem, total depth 2,935 feet; No. 1 L. L. Ward, Section 15-17-14, flowed oil and salt water from sand at 2,614-20 feet and is coring at 2,748 feet. Oilwell Corp.'s No. 2-A Kelly, Section 9-17-14, tested salt water at 2,891 feet and is reaming to bottom to case it off, total depth 3,048 feet. Pure Oil Co.'s No. 6 W. E. Gregory, Section 15-17-14, is drilling at 2,615 feet, and No. 1 Nash, Section 7-17-13, is drilling at 1,924 feet. Rovenger Oil Corp.'s No. 1-B Perdue, Section 9-17-14, flowed salt water at 2,655-59 feet and is coring. Rushing and others are drilling No. 7 Gregory, Section 11-17-14, at 2,245 feet.

MICHIGAN FIELDS

(Continued from Page 56)

oil and gas producer. It came in as a 150-bbl. initial producer at 2,054 feet with barely enough gas to flow the oil.

The Puritan Oil Co.'s No. 1 Burns, SE SE Section 5-10-16, came in at 2,048 feet as an 8,000,000-foot dry gasser in the Dundee formation.

The Joliet-Morris Development Co.'s No. 1 Kooi, SW NE Section 8-10-16, also came in with an open flow capacity gauged at 12,993,000 feet a day of natural gas from the Dundee formation at 2,045 feet.

The Johnson Oil Refining Co.'s No. 2 Van Allsburg, NE SE Section 5-10-16, was completed at 2,066 feet but made so much salt water with a small amount of oil and practically no gas that it will be plugged as a "duster." Brien & Brien's No. 1 Fagan, SW NW Section 10-10-16, also was dry in the Dundee at 2,035 feet.

The Holland Oil & Gas Co.'s No. 1 Joslyn, NE SE Section 5-10-16, also in the congested area of the Muskegon Township field, struck oil, gas and some water at 2,058 feet. As this is higher that it had been expected to reach the oil it is believed there has been a migration of water and oil into the gas sands.

A shot increased the Dixie Oil Co.'s No. 10 Figge from a 40-bbl. initial producer in the upper Traverse formation at from 1,635-58 feet to a 250-bbl. well. It was shot from 1,618 feet to the bottom and made 250 bbls. during the first 24 hours. It made 200 bbls. during the next 24 hours and is still a good producer in the upper pay sands. It is on the Muskegon River flats, NW SW Section 9-10-16.

Two wells are drilling into the Dundee oil pay sands in Muskegon Township and a third is pulling 10-inch casing preparatory to drilling into the upper Traverse pay sands.

There are four rigs on location and four wells are rigging. Three wells are spudding. Rig is being moved in for another well on a location previously announced. There are 25 other locations previously announced on which there is no activity.

Eleven new locations have been announced recently including those already referred to as the start of a possible new extension to the southeast.

Laketon Township

Another well was drilling into the Dundee formation in Laketon Township where there are now five producers of oil or gas or both in the lower formation and one in the upper Traverse formation. The new well is Nelson & Witt's No. 1 Andree, NW SE Section 12-10-17. It was cased at 2,037 feet and is almost certain to be a producer as it is on property adjoining that on which the Hugattie-Dick well was brought in.

The Reed Oil Co.'s No. 4 H. Young well, SE NE Section 11-10-17, struck a good show of oil in the upper Traverse formation at 1,680 feet but will be carried to the Dundee pay sands.

Two new wells are spudding. They are: Nelson & Witt's No. 1 G. Fenner, NW SE Section 11-10-17, and F. S. Grimes and others' No. 1 Brand, SE SE Section 11-10-17.

Five wells are rigging on locations previously announced. They are: Ohio Oil Co.'s No. 1 Gates, NE NE Section 11-10-17; Nelson & Witt's No. 1 F. J. Gates, SW NE Section 11-10-17; H. A. Weideman and others' No. 1 Comley, NE NE Section 14-10-17; Reed Oil Co.'s No. 2 Young, SE NE Section 11-10-17; and Paragon Oil Co.'s No. 1 G. Sebolz, SE NE Section 12-10-17.

There are still eight locations in Laketon Township on which no activity has been started.

Two new locations were announced: Double Shot Oil Co.'s No. 1 H. Dykstra, NW SE Section 12-10-17; and the Johnson Oil Refining Co.'s No. 2 Thompson, SW NE Section 12-10-17. The first is directly east of the latest new producer on the Dick property and the second is directly north. Rigs are being moved in for both of them immediately.

CANADIAN FIELDS

(Continued from Page 56)

tion early in January, and are capable of handling up to 60,000,000 feet of wet gas per day. With two Smith separators attached for the merely experimental application of back pressure, the well has been making between 500 and 600 bbls. of crude naphtha, with an indicated production of at least 650 bbls. when the complete equipment is installed, and a possible production up to 1,000 bbls.

Okalta Oils' No. 2, LSD 8, Section 1-20-3w5, is making new hole in the Dakotas around 3,320 feet with considerable showings of gas and oil. This well for a time made up to 100 bbls. of light crude, the flow being later shut off by caving, and it may be brought back into satisfactory pumping production in this horizon. Okalta's No. 3, LSD 9, same section, has resumed drilling after running casing to the bottom at 2,200 feet.

Mayland Oil Co., LSD 10, Section 17-19-2w5, is at 4,763 feet and in the Home sand, with about 900 feet of light crude standing in the hole. The test got the Home sand at about 4,740 feet and oil was encountered shortly afterward. The 8¼-inch casing has been set at 4,760 feet and production will be tested at this level, though it is expected 20 feet additional drilling will develop sufficient gas to flow the oil. The location is in the south end of the field.

Calmont Oils' No. 1, LSD 2, Section 1-20-3w5, is shut down at 5,650 feet, after three shots which considerably increased the flow of wet gas from the deep lime. The hole is bridged by debris for about 500 feet but wet gas is escaping through the bridge and condensing some crude naphtha. A special control head has been ordered to be used when the bridge is drilled through, but in the meantime efforts are being made to clear the hole by applying back pressure. If the well can be cleared it will likely be a fair commercial producer.

Vulcan Oils' No. 1, LSD 11, Section 13-20-3w5, is cleaning out with the diamond drill outfit, and making about 65 bbls. a day without back pressure. Vulcan Oils' No. 2, same LSD, is reported drilling at 4,906 feet. Spooner Oils' No. 2, Section 24-20-3w5, has cemented 6¾-inch casing in the top of the limestone at 5,095 feet. The drill got the lime at 5,080 feet. The test will be drilled in with the diamond drill outfit now being used to clean out Vulcan's No. 1. While waiting for this efforts will be made to salvage some of the larger strings of casing.

Regent Oil Co.'s No. 1, LSD 16, Section 1-20-3w5, is reported drilling at 3,785 feet, about 40 feet in the deep lime, with a large increase in wet gas production.

McLeod Oil Co.'s No. 3, LSD 16, Section 1-20-3w5, is drilling 122 feet in the deep lime at 4,835 feet, with some shows of wet gas and crude naphtha. McLeod's No. 4, same LSD, is cleaning out 53 feet of debris, which shut off the production encountered at 3,771 feet, and has got back a large part of the original wet gas flow.

Royalite Operations

Royalite Oil Co.'s No. 14, LSD 4, Section 7-20-2w5, is making new hole at 3,248 feet, after drilling past a lost lubricator. Additional wet gas was encountered at this depth, but was speedily got under control and drilling resumed. The well is reported making several million feet a day. This test got the top of the deep lime at a high point, 3,220 feet, but has been held up for some weeks by sidetracking operations. Royalite's No. 13, LSD 6, Section 13-20-3w5, has resumed drilling after cementing casing in the top of the deep lime at 4,646 feet. Royalite's No. 12, LSD 3, Section 13-20-3w5, is underreaming in sandy shale at 3,004 feet. Royalite's No. 15, LSD 1, Section 12-20-3w5, is in a sandy shale at 2,595 feet and underreaming, with 10-inch casing lowered to 2,170 feet. Royalite's No. 16, LSD 2, Section 12-20-3w5, is drilling in sandy shale at 4,151 feet. Royalite's No. 17, LSD 13, Section 6-20-2w5, is drilling in lime at 3,746 feet. Royalite's No. 18, LSD 15, Section 12-20-3w5, is drilling in sandy shale at 3,661 feet. Royalite's No. 19, LSD 5, Section 6-20-2w5, is in hard sand at 3,184 fee and underreaming with 10-inch casing lowered to 3,170 feet. Royalite's No. 20, LSD 7, Section 12-20-3w5, is drilling in shale at 2,285 feet. Royalite's No. 21 has cemented 15½-inch casing at 182 feet.

Home Oil Co.'s No. 3, LSD 14, Section 20-19-2w5, is at 4,335 feet and fish-

ing for an underreamer cutter. North West Associated's No. 1, LSD 6, Section 20-19-2w5, is drilling in hard shale at 2,748 feet.

Freehold Oil Corp.'s No. 1, SW Section 3-21-3w5, which was rigging up to resume drilling after the recent fire, has been delayed owing to a second fire, in which the base of the new derrick was burned. The rest of the outfit was saved by pulling down the rig, which is now being rebuilt. R. C. Paget, foreman, suffered burns to hands and face in his efforts to extinguish the fire.

Drilling Out Bridges

Illinois-Alberta Oils' No. 2, LSD 14, Section 12-20-2w5, is at 3,476 feet and drilling out bridges near the bottom of the hole, with the gas from the Fernie shale horizon mudded off. Model Oils, LSD 8, Section 22-20-3w5, has resumed drilling after cementing caving in the lower Dakotas at 3,010 feet. New McDougall-Segur Oil Co.'s No. 2, LSD 14, Section 12-20-3w5, has resumed drilling after cementing cavings at 4,510 feet. The big lime is expected at 4,690 feet. United Oils' No. 2, LSD 2, Section 24-20-3w5, is drilling at 4,906 feet, after encountering traces of oil and gas in the Home sands entered at 4,828 feet. Advance Oil Co.'s No. 5, LSD 16, Section 19-19-2w5, is drilling in a hard formation at 2,760 feet after a shut down to repair the water system. British Dominion Oil Development Corp.'s No. 2, LSD 6, Section 12-20-3w5, is at 3,310 feet and pulling the 15½-inch casing after which 10-inch will be run to the bottom of the hole. East Crest Oil Co., LSD 5-6, Section 16-19-2w5, used a 60-quart shot to force a lost bit into the soft stratum between the two Dalhousie sands; this is being cemented off and drilling will resume at about 3,160 feet.

Shareholders of Highland Oil Co. have voted in favor of an application to wind up the company. The Highland Oil Co. some time ago turned over its assets to the Regent Oil Co. in exchange for Regent shares, and following the winding up these shares will probably be distributed to the Highland shareholders.

In the Jumping Pound district, west of Calgary, Imperial Oil's Bow River No. 2, LSD 11, Section 31-24-4w5, is drilling at 275 feet.

In the Highwood district, southern foothills, Imperial Oil's Highwood No. 1, LSD 3, Section 36-18-3w5, is drilling in a sharp sand at 3,762 feet.

Moose Mountain

In Moose Mountain district, Signal Hill Oil Co.'s No. 2, LSD 9, Section 34-23-5w5, is drilling new hole at 2,000 feet, after some weeks spent in straightening a crooked hole. On the Morley Reserve, Wabash Oils is in the deep lime at 2,071 feet and waiting for new drilling rods. Some wet gas shows have been met in the lime, which seems to be a closer-grained formation here than in the Turner Valley.

In Aldersyde district, Ranchman's Gas & Oil Co., LSD 16, Section 13-20-29w4, is reported again drilling at 2,840 feet, after a shutdown of several months.

In Suffield district, Ontario Alberta Oil Development Co.'s No. 1, Township 17-8w4, is reported drilling at 1,908 feet.

In the Skiff Field, southern Alberta, Imperial-Devenish's No. 3, offsetting Discovery No. 1 in LSD 11, Section 11-5-14w4, has cemented 12½-inch casing in tough gray shale at 823 feet. Top and bottom artesian water flows, which in No. 1 well aggregated 50,000 bbls. a day, were successfully mudded off.

On the Beaver Dome, Madison Oils' No. 1, LSD 10, Section 24-2-11w4, cemented off water at 731 feet, after encountering a blow of gas at 668 feet.

In Chin Coulee district, Lethalta Oils, LSD 5, Section 33-8-18w4, has been shut down at 2,300 feet and machinery dismantled. The test was spudded in last June and experienced a lot of trouble with hard formations, but had got some oil and gas shows, particularly in the Bow Island sands, and was expected to get the Ellis sand at 3,000 feet. Discontinuance is reported to have been due to a disagreement regarding the acreage, which was subleased from the Jurassic Syndicate of Calgary. Lethalta Oils, Ltd., was financed by eastern Canadian capital with office at Montreal, and operates under a Dominion charter. Officers are: President, George Wood; secretary-treasurer and managing director, A. M. Mowatt; directors, Walter Maughan, Alexander Maclaren and A. F. Wood. It is probable that drilling operations will be undertaken in some other field.

West of Coutts, Ko-Top Oils, Ltd., of Calgary is erecting derrick for No. 1 test in SE Section 2-1-17w4, on the Red Coulee structure just north of the international boundary. Cellar has been dug and camp built and a cable tool outfit is being secured.

Wainwright Field

In the Wainwright Field, east central Alberta, Wainwell Oils' No. 3, LSD 9, Section 36-33-7w4, has been drilled in with the rotary at 2,065 feet. Pumping equipment will be installed and after the rotary mud has been cleared out a capacity test will be made. A production close to that of Wainwell's No. 1 is anticipated. No. 1 has been put on the pump and on a 12-hour test made 250 bbls. The rotary outfit from No. 3 is being moved to Wainwell's No. 2, LSD 15, Section 36-44-7w4, which has been drilled so far with standard tools but has experienced some difficulties.

Increased leasing activity is reported in the Clearwater district of northern Alberta, following the drilling activities last summer of Von Weymarn Brothers of Oslo, Norway. When the Von Weymarn test shut down for the winter, a depth of 570 feet had been reached, after passing through a sand with shows of oil at 327 feet. The main oil sand is looked for around 1,000 feet. Drilling will resume in the spring, when, it is understood, two diamond drill outfits will be put to work. James Wood and S. J. P. Hughes of Edmonton have returned to McMurray after staking oil claims on the Clearwater. Several other parties have yet to return, and in all some 10,000 acres have been staked.

In the Lesser Slave Lake district, International Oils' No. 2 has been definitely abandoned at 3,015 feet. International's No. 3 has been located midway between Nos. 1 and 2, and will spud in next spring, the drilling equipment from No. 2 being moved over the lake ice this winter to the new site. Trevor W. Starkey, the company's geologist, recently passed through Edmonton on his way to the coast, after visiting the field.

Saskatchewan Oil Show

In Saskatchewan, important developments are reported in the Rosetown Syndicate's No. 1 Herschel in LSD 13, Section 4-31-17w3. The location is in the west-central section of the province, somewhat south and west of Saskatoon, and the test was located in the fall of 1927 by John O. Williams, geologist, who has had general charge of the drilling operations. At around 2,010 feet a strong gas flow was encountered, estimated at 2,500,000 feet a day, and at 2,019 feet a good showing of light gravity oil. On coring 4½ feet deeper a small flow of carbonate of soda water, green in color, was struck, carrying with it further light oil. The oil and gas were encountered in the Dakota sand, which was overlain with a hard cap rock carrying brown malta with an asphaltic base. After striking the oil and gas casing was cemented at 2,011 feet, and the hole drilled in, but while waiting for a bailer some debris in the hole forced up by gas formed a plug 180 feet from the bottom. Owing to severe cold weather, with 28 degrees below zero, it was decided to let the hole stand until spring, when it will be drilled between 50 and 100 feet deeper to determine the thickness of the sand. As soon as No. 1 Herschel is finished, No. 2 will be started at a point some distance higher on the structure.

The log of No. 1 Herschel shows that the well started at 1,920 feet elevation in the Belly River sandstone, which continued to about 235 feet. A water sand, yielding 5,000 bbls. a day, was met and shut off just above 200 feet, and a gas sand was met at the Benton-Niobrara contact. Limes and shales of the Niobrara formation continued to 700 feet, and the Benton shale formations from 700 to around 2,000 feet. The first gas sand was met just below the Benton-Dakota contact, and the oil sand immediately below the gas sand. The oil is a high-gravity product.

Hudson's Bay-Marland Oil Co. geologists have been examining nearby territory and it is reported a test will be started next spring in Section 8, about a mile from No. 1 Herschel. The reported gas production and oil showings have stimulated interest in this area, and considerable leasing has been done, though no new drilling will likely be started until this spring.

Citizen's Oil & Gas Co.'s No. 2 Unity, SE Section 23-41-24w3, near Vera is at 2,950 feet, with 80 feet of crooked hole. The bit jammed in the hole but was successfully fished, and the test is now coring and underreaming. At this depth it is in the lime, where production similar to the Turner Valley wet gas is looked for at 3,200 feet. In the Simpson district, Simpson Oil Co.'s No. 1, Section 9-29-25w2, is also in the lime, but is reported to have shut down until next spring.

M. Freeman, drilling contractor of Shelby, Mont., is reported to have contracted to put down a test for Battleford interests. The acreage, 8 miles west of Battleford, was geologized by David F. Olsen of Shelby, and the contract calls for $30,000 for a 2,200-foot depth, with part royalty to the driller if oil is struck. Some 40,000 acres have been filed on at the Prince Albert land office by Battleford, North Battleford and Saskatoon men interested in the venture. The acreage concerned was known to the Indians as the "bad lands" from the fact that after a prairie fire the ground continued to burn with a blue flame, apparently due to gas or oil seepages.

Ontario Fields

In the Ontario fields, Ajax Oil & Gas Co.'s No. 3 Jubenville farm, Dover East Township, has been shot in the Trenton limestone, and is reported to be making around 500,000 feet of gas per day, with traces of oil. This location was some distance east of the deep producers previously drilled in Dover Township, and is the eastermost point at which Trenton production has been secured in this field.

It is announced that in the coming year, the Ontario government will undertake extensive and systematic drilling operations in the Abitibi River area of northern Ontario, to determine the extent of the lignite coal beds at Blacksmith Rapids and to test the presence of oil in commercial quantities elsewhere in the rock formations of this district. The oil possibilities of this area have been investigated by representatives of the Ontario Department of Mines, whose report has been fairly favorable to the existence of oil in commercial quantities, though no large fields are anticipated. It is expected that the producing horizons in the Devonian limestones will be reached by comparatively shallow drilling. The drilling operations being undertaken by the government will be for the purpose of securing geological information rather than to develop immediate commercial production, though it has been intimated that, failing development by private capital, the commercial development of the area may later be undertaken by the government. The Timiskaming & Northern Ontario Railroad has been constructed to a point 140 miles south of James Bay, and will ultimately be completed to the bay.

GULF COAST FIELDS

(Continued from Page 51)

Oil Co.'s No. 19 Mitchell at 915 feet; this company's No. 22 Mitchell at 1,108 feet, and its No. 25 Mitchell at 760 feet. Saturday the following tests were drilling or rigging up: Gulf Production Co.'s No. 7 Chambers; this company's No. 2 Marrs McLean, and Sun Oil Co.'s Nos. 18 and 24.

Sun Oil Co.'s No. 14 Mitchell in the deep sand district on the north edge of the east flank is standing with casing cemented at 3,346 feet to test sand at a total depth of 3,372 feet. Yount Lee Oil Co.'s No. 13 Mitchell is drilling shale at 3,227 feet.

Painter Oil Co.'s No. 1 Turner, a wildcat, is rigged up to drill. Liberty Petroleum Co.'s No. 2 Turner in the same district has casing cemented at 1,512 feet to test this shallow sand. Empire Gas & Fuel Co.'s No. 1 Goggan in the same district, is a location.

Vacuum Oil Co. so far has not been able to complete a derrick for its wildcat in the Trinity River, a mile northwest of the main field, and high water may delay this work for some time. The Texas Company, however, has made location for No. 3 Pickett, offsetting the Vacuum test.

Navarro Oil Co.'s No. 3 Harrison, a former producer in the old field, is drilling deeper in sand and shale at 3,372 feet.

Orange—Orange County

Humble Oil & Refining Co. has set strainer in its No. 12 Winfree, a workover, and as the week closed was bailing. This hole is down 4,615 feet. Sun Oil Co.'s No. 6 Brown is standing in heaving shale at 5,885 feet. Supreme Oil Co.'s No. 1 Jackson is drilling at 3,753 feet.

Boling—Wharton and Fort Bend

Gulf Production Co.'s No. 5 Bay is drilling gumbo and lime at 2,167 feet. South Texas Petroleum Co.'s No. 1 Hyde is drilling shale at 1,820 feet. Sun Oil Co.'s No. 4 E. C. Farmer is drilling shale at 2,760 feet. This company's No. 4 Kasparek is drilling shale at 3,927 feet. The Texas Company's No. 1-A Dipple is drilling gumbo at 749 feet. Its No. 1-B Dipple is standing a derrick but its No. 1 Pleasant is rigging up. Vacuum Oil Co.'s No. 1 Taylor is coring at 2,992 feet. A rig is up for No. 2 Taylor.

Raccoon Bend— Austin County

Humble Oil & Refining Co.-Valley Oil Corp.'s No. 1 Beal was drilling plug Saturday to test sandy shale showing oil at 3,345 feet. These operators have succeeded in filling the cavity in No. 2 Urban and killing the gas flow and are cleaning up the crater caused by the recent blow out preparatory to completing the well. No. 3 Urban is standing. No. 1-C Grawunder (A) is drilling shale and lime at 1,564 feet. No. 2 Walton is drilling shale and lime at 2,079 feet. No. 2 Hardy has been spudded in.

DeWalt—Fort Bend County

Humble Oil & Refining Co.'s No. 4 Sugarland has found the pay sand and has cemented 6⅝-inch casing to test. Bottom of the hole is 3,465 feet. No. 2 Deatherage is rigged up and will start drilling soon. No. 1 Dew is drilling lime and calcite at 3,584 feet. No. 1 Nelson is fishing at 3,027 feet. A derrick has been built for No. 2 Camp.

South Louisiana

Jennings—Acadia Parish

F. J. Getty's No. 1 Getty tested dry at 1,510 feet but will be deepened. Jennings Petroleum Co.'s No. 2 Eunice Crowley is drilling gumbo at 3,489 feet. E. F. Simms' No. 1 Grace Von Schuler is drilling below 4,200 feet. This operator's other tests are standing. The Texas Company's No. 4 Rayne heirs is drilling at 2,976 feet. Yount Lee Oil Co.'s No. 3 Crowley is in lime and rock at 5,503 feet and its No. 6 Housierre-Latrielle is in shale and lime at 4,643 feet.

Edgerly—Calcasieu Parish

With the completion of its No. 1 Prairie Narroni, Rex Petroleum Co. has rigged up to deepen No. 9 Hunter, a former producer. Green Oil Co.'s No. 5 Moore also is rigged up to deepen.

Lockport—Calcasieu Parish

Vacuum Oil Co.-Gulf Refining Co.'s No. 22 Miller is drilling gumbo at 2,977 feet. This company's No. 23 Miller is drilling gumbo at 945 feet and No. 1 Henshaw-Lemoin is drilling sandy shale at 5,166 feet.

Vinton—Calcasieu Parish

Gulf Refining Co.'s No. 47 Star-Vincent is drilling below 2,848 feet. Edgerly Petroleum Co.'s No. 5 Vincent, a workover, is down 3,244 feet. Salt Dome Oil Co.'s No. 1 Shaw is drilling at 2,861 feet. Vinton Petroleum Co. is rigging up for No. 1 Matilda Gray.

Hackberry—Cameron Parish

Calcasieu Oil Co.'s No. 1 Breaux, a

the bank of Calcasieu Lake, tested salt water at 4,206 feet and is pulling screen to deepen. This test was drilled following the completion during November of Louisiana Land & Exploration Co.'s No. 3-B Calcasieu Lake, in the lake, which has proved one of the best producers on the dome. Cameron Oil Co.-Rycade Oil Corp.'s No. 1 Vincent on the old Hackberry dome, is drilling at 2,270 feet. Rycade's No. 1 Gulf Land is drilling sand and boulders at 3,494 feet. Yount Lee Oil Co.'s No. 8 School Land is drilling rock at 3,897 feet.

Miscellaneous Fields

Gulf Production Co.'s No. 8 Smith, High Island, Galveston County, is drilling below 2,839 feet. Marrs McLean's tests at High Island are standing. Sinclair Oil & Gas Co.'s No. 5 Norton, Damon Mound, Brazoria County, is drilling shale at 3,575 feet. Rycade Oil Corp.-Humble Oil & Refining Co.'s No. 4 Hudson, Markham, has been spudded in. Gulf Production Co.'s No. 18 Moore, Orchard, also has been spudded in. South Texas Petroleum Co.'s No. 1 Morris, Humble, is drilling lime and shale at 5,255 feet. The Texas Company's No. 22 House, Humble, is drilling gumbo, lime and boulders at 2,465 feet. The latter company also is rigging up to deepen its No. 14 Koehler at Humble. Sun Oil Co.'s No. 1 Kovalcik, North Dayton wildcat, is drilling gumbo at 3,320 feet.

Yount Lee Oil Co.'s No. 3 Louisiana Petroleum Co., Anse La Butte, St. Martin Parish, La., drilled into salt at 4,247 feet and is to be abandoned. Rycade Oil Corp.'s No. 3 Atchafalaya fee, Bayou Bouillon, St. Martin Parish, is coring sand at 4,144 feet. This company's No. 4 Atchafalaya fee is drilling hard lime and sand at 4,097 feet. This company's No. 5 Bouillon fee has succeeded in getting returns again from its No. 5 Bouillon fee and is preparing to set casing. Nos. 2 and 4 Bouillon fee, former producers, still are pulling screen to deepen. Pure Oil Co.'s No. 7 Yount Lee Oil Co., Sweet Lake, Cameron Parish, is drilling gumbo at 3,657 feet. This company's No. 8 Yount Lee Oil Co. is drilling gumbo at 2,305 feet.

Miscellaneous Wildcats

Texas

Brazoria County—Reed & Rucks' No. 4 Muldoon, in what is known as the "Slop Bowl" district in the southern part of the county, has been abandoned in hard sand at 1,028 feet. Shell Petroleum Corp.'s No. 3 Reece, Allen Dome, is drilling hard sand below 2,191 feet where the 9¼-inch plug was drilled out. This company's No. 5 Allen, same dome, is drilling stuck drill stem at 4,054 feet. No. 1 Random, a former producer, also is sidetracking to deepen. Empire Gas & Fuel Co. has made location for No. 2 Brock at Stratton Ridge, No. 1 Brock being abandoned in cap rock early in December.

Calhoun County—B. F. Thompson's No. 1 Thomas, 10 miles west of Port Lavaca, is drilling brown gumbo at 2,328 feet.

Chambers County—Gulf Production Co.'s No. 1 Willborn, Hankamer Dome, is drilling sand and shale at 2,246 feet. Pure Oil Co.'s No. 2 Lost River, Lost Lake Dome, set 63 feet of 4¾-inch screen at a total depth of 3,623 feet and tested salt water with some oil. It is pulling screen to deepen. This company's No. 2 Lost Lake is drilling hard, sandy lime at 1,489 feet.

Fort Bend County—South Texas Petroleum Co.'s No. 1 Hartfield, Needville, is drilling broken shale and gumbo at 4,574 feet.

Galveston County—Republic Production Co.'s No. 1 Lobit, Dickinson, is drilling brown shale at 3,732 feet. Long and associates' No. 1 Irwine & Bishop remains shut down at 4,320 feet.

Harris County—Baldwin and associates' No. 1 Kitzman, Cypress, has resumed drilling after being shut down in sticky shale at 2,910 feet several weeks. Cedar Bayou Oil Co.'s No. 1 Johnson, northwest of Barbers Hill, is drilling gumbo and lime at 4,610 feet. Humble Oil & Refining Co.'s No. 1 Minnetex, Mykawa, has set 9⅝-inch casing at 3,917 feet. Total depth of the hole is 4,976 feet in sandy shale. Humble's No. 5 Warren at Hockley is drilling hard, streaked sand at 637 feet. Paxton and associates' No. 1 Brubacker, northeast of Clodine, is drilling hard sand at 865 feet.

Jackson County—The Texas Company's No. 1 Moore, north of the Edna gas field, is drilling shale at 2,858 feet. Wright Brothers' No. 2 Classen, Edna, is drilling gumbo at 3,257 feet.

Jefferson County—Gulf Production Co.'s No. 2 Burrell, Fannette, is drilling shale at 5,458 feet. The Texas Company's No. 1 Pipkin is in sticky shale at 2,816 feet but is reaming to set a string of casing. Westbury Syndicate's No. 1 West, northeast of Westbury, is drilling below 2,239 feet. Bleakie Oil Co.'s No. 1 Tolliver, northeast of Westbury, is rigged up.

Liberty County—Humble Oil & Refining Co.'s No. 3 Sterling, Moss Bluff Dome, is drilling hard sand at 2,888 feet. The Texas Company's No. 1 Davis, Davis Hill, is fishing drill collar and bit at 4,638 feet. Union Exploration Co.'s No. 1 Esperson, Angus McNeel Survey, is drilling shale and lime at 5,005 feet. Sun Oil Co.'s No. 1 Kovalcik, North Dayton, is drilling gumbo at 3,320 feet.

Matagorda County—Crossland and associates' No. 1 Murphy, Shepherds Mott, is drilling lime at 2,197 feet.

South Louisiana

Ascension Parish—Big Dome Drilling & Development Co.'s No. 1 Rearwood, Section 82-10s-2e, is drilling sand and gravel at 698 feet. Other tests in the parish are standing at previously reported depths.

Cameron Parish — Shell Petroleum Corp.'s No. 5 Watkins, Black Bayou, is coring at 1,285 feet. This company's No. 6 Watkins, Black Bayou, is coring rock at 1,370 feet.

Iberia Parish—Gulf Refining Co. has spudded in its No. 8-Z State, Loreauville. This company's No. 3 Kling, same dome, is drilling below 1,048 feet. Louisiana Land & Exploration Co.'s No. 3-A Vermillion Bay is drilling sand and boulders at 3,198 feet. Louisiana Oil & Gas Co.'s No. 1 Bernard is reaming to the bottom of the hole at 2,260 feet, which is in sandy shale showing oil.

Iberville Parish — Shell Petroleum Corp.'s No. 3 Wilbert, White Castle, is ready to spud. Union Sulphur Co.'s No. 3 Schwing, Bayou DesGlaise Dome, is drilling lime rock at 2,841 feet. Standard Oil Co.'s No. 2 Wilbert, Bayou Blue, is standing a location and its No. 1 Wilbert, same dome, is a rig.

Miscellaneous Parishes—Evangeline Oil Co.'s No. 1 Crowell-Spencer, Pine Prairie Dome, Evangeline Parish, is drilling shale at 4,306 feet. Gulf Refining Co.'s No. 8 Stark, Thibodaux, LaFourche Parish, is drilling at 1,200 feet. Miller and associates' No. 1 Kombacker, Point Coupe Parish, is drilling sticky shale at 1,933 feet. Ohio Oil Co.'s No. 3 Martin, Hager Dome, St. Martin Parish, has set 6-inch casing at 2,108 feet. West Pearl Oil Co.'s No. 1 Fritsche, St. Tammany Parish, is standing with 6⅝-inch casing cemented at 1,825 feet. Tanli Oil Co.'s No. 2 Weinberger, Tangiphohoa Parish, is drilling gumbo at 3,937 feet. Robinson & Long's No. 1 Raccourii, West Feliciana Parish, is drilling sandy shale at 2,455 feet.

LOUISIANA OIL TAX

SHREVEPORT, La., Dec. 29. — The oil industry will have paid the State more than $1,000,000, exclusive of severance and all other taxes levied upon it, by December 31, Fred J. Grace, registrar of the State Land Office, says. The State owns the lake and river bottoms, marsh lands, etc., and numerous salt domes located on state land in the Gulf Coast country have been leased this year for development. Royalties, bonus and rentals on these leases this year have reached $1,012,000 with December royalties to come. During the two-year period ending March 31, this year, the State's revenues from this source amounted to only $684,204.

HOLIDAYS SLOWED UP FIELD WORK BUT INITIAL OUTPUT INCREASED

The Christmas season slowed up operations in the field and the record of completed wells in December suffered a slump. There were 1,811 completions east of California, 182 fewer than in November. The volume of initial production increased over that of November by 101,511 bbls., the increase comming largely from West Texas. The dry holes drilled were 599 in number, or 18 fewer than in in November, and the gas wells 234, or 10 less than in the previous month.

As usual in December new work fell off, also owing partly to the holiday season, and the total of new operations in progress showed a drop of 55, as compared with the November figures.

SUMMARY OF ALL OPERATIONS

Wells Completed

Field—	Comp.	Prod.	Dry	Gas
Eastern	342	1,428	31	73
Central Ohio	126	759	32	56
Lima	16	107	7	1
Indiana	19	154	8	3
Illinois	14	98	8	0
Michigan	31	3,235	5	4
Kentucky	128	1,990	44	6
Tennessee	1	.....	..	1
Oklahoma	272	80,311	87	24
Kansas	46	3,125	22	4
Texas Panhandle	31	2,826	9	4
East Central Texas	9	3,342	8	0
West Texas	55	324,727	25	0
North Central Texas	322	14,642	146	13
Southwest Texas	88	7,856	47	15
East Texas	5	.....	2	3
Gulf Coast	129	43,517	55	1
North Louisiana	41	218	22	15
Arkansas	22	3,805	11	0
Wyoming	17	1,152	4	4
Montana	45	1,970	14	6
Colorado	11	253	7	0
Utah	2	.....	1	1
New Mexico	9	700	7	1
Total Dec.	1,811	496,215	599	234
Total Nov.	1,993	394,704	617	244
Difference	182	101,511	18	10

Rigs and Wells Drilling

Field—	Rigs	Drlg.	Ttl.
Eastern	103	355	458
Central Ohio	72	161	233
Lima	2	24	26
Indiana	4	47	51
Illinois	3	11	14
Michigan	61	74	135
Kentucky	17	190	207
Tennessee	4	15	19
Mississippi	3	21	24
Alabama	0	6	6
Oklahoma	178	855	1,033
Kansas	74	245	319
Texas Panhandle	35	116	151
East Central Texas	1	17	18
West Texas	60	350	410
North Central Texas	97	420	517
Southwest Texas	34	184	218
East Texas	4	21	25
Gulf Coast	14	179	193
North Louisiana	19	78	97
Arkansas	19	59	78
Wyoming	33	141	174
Montana	22	117	139
Colorado	12	77	89
Utah	3	32	35
New Mexico	19	79	98
Total Dec.	893	3,874	4,767
Total Nov.	944	3,878	4,822
Difference	51	4	55

OKLAHOMA FIELDS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Creek	22	1,640	13	2
Carter	10	532	1	1
Grady	4	28	..	3
Kay	7	375	3	2
Muskogee	13	27	9	1
Okfuskee	10	2,035	3	..
Okmulgee	24	113	13	4
Osage	22	292	8	1
Pawnee	4	20	2	1
Pontotoc	13	4,152	3	2
Pottawatomie	54	41,700	3	..
Seminole	42	22,144	12	1
Stephens	17	1,532	3	..
Wagoner	5	10	2	2
Miscellaneous	25	5,711	12	4
Total Dec.	272	80,311	87	24
Total Nov.	281	68,049	87	27
Difference	9	12,262	..	3

Summary of Rigs and Wells Drilling

County—	Rigs	Drlg.	Ttl.
Carter	8	16	24
Creek	18	75	93
Grady	2	9	11
Grant	1	9	10
Hughes	..	12	12
Kay	1	17	18
Kiowa	2	18	20
Logan	3	23	26
Muskogee	4	32	36
Okfuskee	10	31	41
Okmulgee	10	28	38
Osage	9	38	47
Pawnee	1	9	10
Payne and Lincoln	5	14	19
Pontotoc	9	20	29
Pottawatomie	22	160	182
Seminole	47	213	260
Stephens	8	31	39
Tulsa	2	6	8
Wagoner	1	9	10
Miscellaneous	15	85	100
Total December	178	855	1,033
Total November	228	763	991
Difference	50	92	42

KANSAS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Butler	6	470	1	0
Cowley	3	.....	2	1
Elk	4	240	1	0
Greenwood	11	550	4	0
Miscellaneous	22	1,865	14	3
Total Dec.	46	3,125	22	4
Total Nov.	99	5,175	48	8
Difference	53	2,050	26	4

Summary of Rigs and Wells Drilling

County—	Rigs	Drlg.	Ttl.
Butler	8	21	29
Cowley	3	33	36
Elk	1	25	26
Ellis	2	14	16
Greenwood	12	23	35
McPherson	2	14	16
Marion	2	10	12
Russell	4	7	11
Sedgwick	9	17	26
Sumner	3	16	19
Woodson	1	9	10
Miscellaneous	27	56	83
Total December	74	245	319
Total November	44	244	288
Difference	30	1	31

NORTH LOUISIANA

Summary of Field Operations

	Comp.	Prod.	Dry	*Gas	Rigs	Drg.	Ttl.
Blenville	2	0	2	0	0	2	2
Bossier	5	0	4	1	3	4	7
Caddo	2	108	1	0	0	16	16
Catahoula	0	0	0	0	0	1	1
Claiborne	1	0	1	0	0	4	4
DeSoto	1	0	0	1	2	7	9
East Carroll	1	0	1	0	0	1	1
Franklin	0	0	0	0	0	1	1
Grant	0	0	0	0	1	0	1
LaSalle	1	0	1	0	0	3	3
Madison	0	0	0	0	0	1	1
Morehouse	4	0	0	4	4	2	6
Natchitoches	0	0	0	0	0	1	1
Ouachita	4	0	1	3	4	8	12
Rapides	0	0	0	0	0	2	2
Red River	1	25	0	0	0	2	2
Richland	5	0	3	2	1	5	6
Sabine	3	50	2	0	2	1	3
Tensas	0	0	0	0	0	1	1
Union	4	0	3	1	1	4	5
Webster	7	35	3	3	1	12	13
Total Dec.	41	218	22	15	19	78	97
Total Nov.	17	110	10	5	29	89	118
Difference	24	108	12	10	10	11	21

*Gas production: Bossier Parish, 6,000,000; DeSoto, 1,000,000; Morehouse, 69,000,000; Ouachita, 5,250,000; Richland, 23,000,000; Union, 12,000,000; Webster, 40,416,000; total, 156,666,000 feet.

ARKANSAS

Summary of Field Operations

	Comp.	Prod.	Dry	*Gas	Rigs	Drg.	Ttl.
Ashley	1	0	1	0	1	2	3
Bradley	0	0	0	0	0	1	1
Calhoun	0	0	0	0	1	1	2
Chicot	1	0	1	0	0	2	2
Clark	1	0	1	0	0	1	1
Clay	0	0	0	0	0	1	1
Columbia	0	0	0	0	1	3	4
Faulkner	0	0	0	0	0	1	1
Franklin	1	0	1	0	1	0	1
Garland	0	0	0	0	0	1	1
Jackson	0	0	0	0	0	1	1
Johnson	0	0	0	0	0	1	1
Little River	0	0	0	0	0	1	1
Logan	0	0	0	0	0	2	2
Miller	0	0	0	0	0	1	1
Nevada	2	65	0	0	0	3	3
Ouachita	1	30	0	0	2	4	6
Union	15	3,710	7	0	14	33	47
Total Dec.	23	3,805	11	0	19	59	78
Total Nov.	14	1,445	4	3	19	58	77
Difference	8	2,360	7	3	0	1	1

*Gas production: Union County, 7,000,000.

TEXAS PANHANDLE

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Gray	19	1,016	6	1
Hutchinson	6	580	1	..
King	1	580	1	..
Moore	1	1,230	..	..
Wheeler	4	.....	1	3
Total Dec.	31	2,826	9	4
Total Nov.	24	2,974	6	9
Difference	3	148	3	5

Summary of Rigs and Drilling Wells

County—	Rigs	Drlg.	S.D.	Ttl.
Carson	2	7	5	14
Gray	11	37	7	55
Hutchinson	10	15	7	32
Moore	3	9	..	12
Wheeler	7	5	7	19
Misc. counties	2	7	10	19
Total Dec.	35	80	36	151
Total Nov.	28	85	42	155
Difference	7	5	6	4

WEST TEXAS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Concho	1	.....	1	..
Crane	1	200	..	..
Crockett	4	.....	4	..
Fisher	3	110	2	..
Glasscock	1	.....	1	..
Howard	14	12,354	2	..
Jones	2	80	2	..
Irion	2	.....	2	..
Kent	1	.....	1	..
Loving	2	140	..	..
Menard	2	.....	2	..

Pecos	8	177,092	2	..
Taylor	1	....	1	..
Reagan	4	239	1	..
Runnels	1	....	1	..
Sutton	1	165	..	..
Upton	35	134,347	2	..
Total Dec.	85	324,727	25	..
Total Nov.	125	239,740	31	1
Difference	40	84,987	6	1

Summary of Rigs and Drilling Wells

County—	Rigs	Drlg.	S.D.	Ttl.
Crane	1	4	..	5
Crockett	..	2	5	7
Fisher	1	3	3	7
Glasscock	3	5	1	9
Howard	11	47	5	63
Jones	10	21	4	35
Mitchell	1	4	..	5
Pecos	8	25	13	46
Reagan	1	2	8	11
Runnels	1	4	4	9
Upton	1	4	..	5
Ward	..	4	1	5
Winkler	9	97	6	112
Misc. counties	13	36	42	91
Total Dec.	60	258	92	410
Total Nov.	78	248	97	423
Difference	18	10	5	13

NORTH CENTRAL TEXAS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Archer	41	757	24	..
Brown	35	606	16	1
Burnet	1	....	1	..
Callahan	18	181	9	..
Coleman	28	976	15	4
Clay	1	....	1	..
Cooke	6	173	3	..
Eastland	19	233	7	3
Erath	1	....	1	..
Hardeman	1	....	1	..
McCulloch	4	....	4	..
Montague	5	105	..	..
Jack	6	126	4	..
Palo Pinto	3	....	2	1
Shackelford	10	551	5	1
Stephens	7	7	3	3
Throckmorton	3	74	2	..
Wichita	45	3,906	17	..
Wilbarger	39	6,566	8	..
Young	40	381	22	..
Total Dec.	322	14,642	145	13
Total Nov.	368	13,510	173	18
Difference	46	1,132	28	5

Summary of Rigs and Drilling Wells

County—	Rigs	Drlg.	S.D.	Ttl.
Archer	13	20	3	36
Brown	5	23	31	59
Callahan	..	10	5	15
Coleman	10	23	16	49
Cooke	5	6	7	18
Clay	..	1	5	6
Eastland	5	17	10	32
Haskell	..	2	7	9
Jack	..	6	8	18
Montague	..	3	4	7
Palo Pinto	3	9	4	16
Shackelford	1	17	..	18
Stephens	1	16	4	21
Throckmorton	..	1	1	2
Wichita	20	28	5	53
Wilbarger	16	63	11	90
Young	10	18	8	36
Misc. counties	4	16	12	32
Total Dec.	97	279	141	517
Total Nov.	71	299	135	505
Difference	26	20	6	12

GULF COAST

Summary of Field Operations

Texas

Field—	Comp.	Prod.	Abd.	Gas	Rigs	Drlg.	Ttl.
Barbers Hill	3	15	2	0	2	7	9
Batson	1	2	0	0	0	3	3
Big Creek	4	1,758	0	0	0	1	1
Blue Ridge	11	4,325	5	0	0	6	6
Boling	9	4,264	4	0	3	9	12
Damon Mound	0	0	0	0	0	1	1
DeWalt	1	0	1	0	0	4	4
Goose Creek	3	93	0	0	0	4	4
High Island	1	2,000	0	0	0	2	2
Hull	6	900	1	0	0	7	7
Humble	3	1,415	1	0	0	2	2
Liberty	16	5,055	4	0	3	10	13
Markham	2	93	1	0	0	1	1
Nash	0	0	0	0	0	3	3
No. Dayton	0	0	0	0	0	1	1
Orchard	2	0	2	0	0	2	2
Orange	2	8	1	0	0	3	3
Pierce Junction	5	9,800	2	0	0	9	9
Raccoon Bend	2	2,700	0	0	1	6	7
Saratoga	3	20	2	0	0	0	0
Sour Lake	3	16	1	0	0	2	2
Spindletop	11	3,575	4	0	1	14	15
W. Columbia	0	0	0	0	0	0	0
Miscellaneous	14	55	11	1	2	29	31
Total Dec.	102	36,094	42	1	12	126	138
Total Nov.	91	27,616	38	2	21	145	166
Difference	11	8,478	4	1	9	19	28

South Louisiana

Field—	Comp.	Prod.	Abd.	Gas	Rigs	Drlg.	Ttl.
Anse La Butte	0	0	0	0	0	1	1
Bayou Boullion	1	198	0	0	0	4	4
Edgerly	3	240	0	0	0	3	3
Hackberry	5	1,240	3	0	0	5	5
Jennings	4	130	2	0	0	6	6
Lockport	2	400	1	0	0	6	6
Sorrento	1	1,400	0	0	0	1	1
Starks	1	0	1	0	0	2	2
Sulphur	2	3,500	0	0	1	5	6
Sweet Lake	0	0	0	0	0	2	2
Vinton	2	315	0	0	0	2	2
Miscellaneous	6	0	6	0	1	16	17
Total Dec.	27	7,423	13	0	2	53	55
Total Nov.	30	5,732	19	0	10	59	69
Difference	3	1,691	6	0	8	6	14
Gulf Coast	129	43,517	55	1	14	179	193
Total last month	121	33,348	57	2	31	204	235
Difference	8	10,169	2	1	17	25	42

SOUTHWEST TEXAS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drlg.	Ttl.
Mirando	28	3,945	16	6	16	37	53
Joe Bruner	18	3,005	8	0	2	49	51
Luling Field	3	97	0	0	0	2	2
Agua Dulce	3	0	0	3	0	3	3
Saxet Field	1	0	0	1	0	1	1
Refugio Field	7	125	1	3	1	16	17
Miscellaneous	28	684	22	2	15	76	91
Total Dec.	88	7,856	47	15	34	184	218
Total Nov.	84	6,160	45	10	29	165	194
Difference	4	1,696	2	5	5	19	24

EAST CENTRAL TEXAS

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rigs	Drlg.	Ttl.
Anderson	2	2,712	1	0	0	8	8
Cherokee	1	504	0	0	0	1	1
Camp	1	0	1	0	0	0	0
Freestone	0	0	0	0	0	1	1
Falls	1	0	1	0	0	2	2
Henderson	0	0	0	0	1	1	2
Limestone	3	126	2	0	0	2	2
Nacogdoches	1	0	1	0	0	0	0
Rusk	0	0	0	0	0	1	1
Smith	0	0	0	0	0	1	1
Total Dec.	9	3,342	6	0	1	17	18
Total Nov.	5	2,410	3	0	2	16	18
Difference	4	932	3	0	1	1	0

EAST TEXAS

Summary of Field Operations

	Comp.	Prod.	Dry*	Gas	Rigs	Drg.	Ttl.
Bowie	0	0	0	0	0	1	1
Camp	0	0	0	0	0	1	1
Cass	0	0	0	0	0	1	1
Harrison	1	0	1	0	0	1	1
Panola	4	0	1	3	4	12	16
Red River	0	0	0	0	0	2	2
Shelby	0	0	0	0	0	2	2
Total Dec.	5	0	2	3	4	21	25
Total Nov.	6	147	1	4	5	18	23
Difference	1	147	1	1	1	3	2

*Gas production: Panola County 51,000,000.

MISSISSIPPI

Rigs and Wells Drilling

	Rigs	Drlg.	Ttl.
Alcorn	0	1	1
Calhoun	0	1	1
Chickasaw	0	1	1
Claiborne	0	2	2
Hines	0	1	1
Itawamba	1	0	1
Jackson	0	1	1
Jasper	0	1	1
Lauderdale	1	0	1
Lee	0	1	1
Monroe	0	7	7
Rankin	0	1	1
Sharkey	1	0	1
Simpson	0	1	1
Stone	0	1	1
Washington	0	1	1
Webster	0	1	1
Total December	3	21	24
Total November	0	22	22
Difference	3	1	2

ALABAMA

Rigs and Wells Drilling

	Rigs	Drlg.	Ttl.
Houston	0	1	1
Lawrence	0	2	2
Marion	0	1	1
Washington	0	2	2
Total December	0	6	6
Total November	0	5	5
Difference	0	1	1

WYOMING

Summary of Field Operations

District or County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Salt Creek	4	344	0	0	3	5	8
Big Horn	2	0	1	1	1	12	13
Carbon	1	0	0	1	0	14	14
Fremont	1	0	0	1	3	9	12
Hot Springs	0	0	0	0	1	3	4
Johnson	0	0	0	0	1	3	4
Lincoln	1	0	1	0	2	4	6
Natrona (ex. Salt C.)	0	0	0	0	5	2	7
Niobrara	1	0	0	1	2	4	6
Park	3	685	1	0	5	32	37
Sweetwater	0	0	0	0	2	10	12
Sublet	3	123	0	0	1	23	24
Weston	0	0	0	0	1	2	3
Uinta	0	0	0	0	5	10	15
Miscellaneous	1	0	1	0	1	8	9
Total Dec.	17	1,152	4	4	33	141	174
Total Nov.	17	3,869	5	1	32	146	178
Difference	0	2,717	1	3	1	5	4

COLORADO

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Bent	0	0	0	0	0	2	2
Fremont	6	120	4	0	3	15	18
Huerfano	0	0	0	0	0	2	2
Jackson	0	0	0	0	0	6	6
La Plata	0	0	0	0	0	3	3
Larimer	3	123	2	0	1	7	8
Las Animas	0	0	0	0	1	2	3
Moffat	1	0	1	0	5	8	13
Routt	1	10	0	0	2	8	10
Miscellaneous	0	0	0	0	0	24	24
Total Dec.	11	253	7	0	12	77	89
Total Nov.	9	902	3	0	11	78	89
Difference	2	649	4	0	1	1	0

UTAH

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Box Elder	0	0	0	0	0	3	3
Grand	2	0	1	1	0	8	8
San Juan	0	0	0	0	1	2	3
Uinta	0	0	0	0	1	6	7
Washington	0	0	0	0	0	7	7
Miscellaneous	0	0	0	0	1	6	7
Total Dec.	2	0	1	1	3	32	35
Total Nov.	0	0	0	0	4	31	35
Difference	2	0	1	1	1	1	0

NEW MEXICO

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Chaves	0	0	0	0	0	3	3
De Baca	0	0	0	0	0	3	3
Eddy	0	0	0	0	4	4	8
Guadalupe	0	0	0	0	0	2	2
Lea	4	700	3	0	7	23	30
McKinley	3	0	3	0	0	9	9
Roosevelt	0	0	0	0	3	0	3
San Juan	2	0	1	1	3	17	20
San Miguel	0	0	0	0	1	3	4
Torrance	0	0	0	0	1	5	6
Miscellaneous	0	0	0	0	0	10	10
Total Dec.	9	700	7	1	19	79	98
Total Nov.	5	200	4	0	17	80	97
Difference	4	500	3	1	2	1	1

MONTANA

Summary of Field Operations

District—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Cat Creek	4	50	3	0	0	3	3
Kevin-Sunburst	9	790	3	1	9	14	23
Pondera	22	1,110	4	0	6	36	42
Misc.	10	20	4	5	7	64	71
Total Dec.	45	1,970	14	6	22	117	139
Total Nov.	40	1,433	7	6	28	111	139
Difference	5	537	7	0	6	6	0

KENTUCKY-TENNESSEE

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Warren	2	5	1	0	0	4	4
Allen	10	34	5	0	0	8	8
Barren	3	33	0	0	0	5	5
Ohio	49	953	11	4	4	64	68
Daviess	45	875	20	1	6	42	48
Hancock	1	0	1	0	1	5	6
McLean	1	0	1	0	0	4	4
Henderson-Union	1	15	0	0	0	10	10
Webster	0	0	0	0	0	2	2
Muhlenburg	0	0	0	0	0	2	2
Breckenridge	5	40	1	0	0	2	2
Butler	0	0	0	0	1	3	4
Hopkins	0	0	0	0	0	9	9
Meade	0	0	0	0	1	1	2
Muldwell	0	0	0	0	0	1	1
Trigg	0	0	0	0	0	1	1
Cumberland-Monroe	1	0	1	0	0	0	0
Hardin	0	0	0	0	0	1	1
Christian	0	0	0	0	0	3	2	5
Wayne	0	0	0	0	0	7	7
Powell	0	0	0	0	0	1	1
Estill	5	6	1	0	0	4	4
Lee-Owsley	1	0	0	1	0	1	1
Wolfe	0	0	0	0	0	1	1
Morgan	1	0	1	0	0	0	0
Lawrence-Johnson	0	0	0	0	0	2	2
Johnson-Magoffin	2	29	0	0	1	3	4
Floyd-Knott	0	0	0	0	0	1	1
Clay	0	0	0	0	0	2	2
Knox	1	0	1	0	0	2	2
Total Dec.	128	1,990	44	6	17	190	207
Total Nov.	144	1,919	48	9	15	184	199
Difference	16	71	4	3	2	6	8

TENNESSEE

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drlg.	Ttl.
Clay	1	0	0	1	2	13	15
Jackson	0	0	0	0	0	2	2
Marshall	0	0	0	0	1	0	1
Decatur	0	0	0	0	1	0	1
Total Dec.	1	0	0	1	4	15	19
Total Nov.	3	390	0	0	4	16	20
Difference	2	390	0	1	0	1	1

CENTRAL OHIO

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drlg.	Ttl.
Ashland	11	67	5	3	7	14	21
Medina	4	0	2	2	1	5	6
Lorain	4	0	1	3	2	4	6
Wayne	6	0	2	4	5	9	14
Holmes	4	0	2	2	3	8	11
Cuyahoga	1	30	1	2	1	1	2
Richland	2	0	0	2	0	4	4
Knox	7	71	3	2	5	6	11
Coshocton	7	140	2	1	3	3	6
Ashtabula	1	0	0	1	0	0	0
Summitt	5	0	1	4	2	19	21
Licking	18	198	2	2	10	13	23
Muskingum	7	191	3	3	4	12	16
Athens	18	3	5	10	7	23	30
Meigs	9	22	1	4	4	13	17
Jackson	5	0	0	5	8	10	18
Vinton	2	7	0	1	1	1	2
Stark	0	0	0	0	1	1	2
Lawrence	1	0	0	1	1	2	3
Pickaway	0	0	0	0	0	1	1
Gallia	1	0	0	1	0	1	1
Tuscarawas	1	0	1	0	0	1	1
Fairfield	2	0	1	1	1	4	5
Guernsey	7	30	0	5	6	6	12
Total Dec.	126	759	32	56	72	161	233
Total Nov.	114	901	28	41	83	170	253
Difference	12	142	4	15	11	9	20

INDIANA

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drlg.	Ttl.
Jay	1	20	0	0	0	1	1
Adams	0	0	0	0	1	0	1
Gibson	5	30	3	1	1	6	7
Pike	3	10	2	0	0	0	0
Daviess	4	0	0	0	0	2	2
Sullivan	3	34	0	0	0	4	4
Vigo	1	30	0	0	0	1	1
Grant	0	0	0	0	0	1	1
Huntington	0	0	0	0	0	1	1
Wells	0	0	0	0	0	1	1
Spencer	3	25	2	0	1	9	10
Dubois	0	0	0	0	0	2	2
Knox	0	0	0	0	0	1	1
Benton	0	0	0	0	0	1	1
Fountain	0	0	0	0	0	1	1
Monroe	0	0	0	0	0	1	1
Bartholomew	0	0	0	0	0	1	1
Miami	0	0	0	0	0	1	1
Montgomery	0	0	0	0	0	1	1
Wabash	0	0	0	0	0	1	1
Greene	0	0	0	0	0	3	3
Henry	0	0	0	0	0	1	1
Crawford	1	0	1	0	0	1	1
Perry	0	0	0	0	1	1	2
Posey	0	0	0	0	0	2	2
Vandeburg	0	0	0	0	0	2	2
Steuben	1	0	0	0	0	0	0
Lagrange	0	0	0	0	0	1	1
Hancock	0	0	0	0	0	1	1
Rush	1	0	0	1	0	0	0
Total Dec.	19	154	8	2	4	47	53
Total Nov.	16	101	5	5	5	58	68
Difference	3	53	3	3	1	11	15

ILLINOIS FIELDS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drlg.	Ttl.
Clark	0	0	0	0	0	2	2
Cumberland	1	0	1	0	0	0	0
Crawford	4	3	2	0	3	7	10
Lawrence	1	5	0	0	0	0	0
Wabash	4	90	1	0	0	2	2
Marion	1	0	1	0	0	0	0
Macon	1	0	1	0	0	0	0
Madison	1	0	1	0	0	0	0
Shelby	1	0	1	0	0	0	0
Total Dec.	14	98	8	0	3	11	14
Total Nov.	12	71	5	1	3	22	26
Difference	2	27	3	1	0	11	12

LIMA FIELDS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drlg.	Ttl.
Wood	2	2	0	0	2	5	7
Hancock	2	50	1	0	0	3	3
Allen	2	30	0	0	0	1	1
Auglaize	1	10	0	0	0	1	1
Van Wert	1	10	0	0	0	0	0
Mercer	1	5	0	0	0	3	3
Seneca	5	0	5	0	0	6	6
Lucas	0	0	0	0	0	1	1
Ottawa	0	0	0	0	0	1	1
Hardin	1	0	0	1	0	1	1
Darke	0	0	0	0	0	1	1
Wyandot	1	0	1	0	0	0	0
Huron	0	0	0	0	0	1	1
Total Dec.	16	107	7	1	2	24	27
Total Nov.	16	204	3	4	7	24	35
Difference	0	97	4	3	5	0	8

MICHIGAN

Summary of Field Operations
Muskegon County

	Comp.	Prod.	Dry	Gas	Rigs	Drlg.	Ttl.
Muskegon	27	2,870	4	4	51	45	96
Isabelle	3	365	0	0	0	3	3
Midland	0	0	0	0	0	2	2
Shawassee	0	0	0	0	0	1	1
Newyago	0	0	0	0	1	2	3
Crawford	0	0	0	0	0	1	1
Montcalm	0	0	0	0	1	0	1
Sanilac	0	0	0	0	0	1	1
St. Clair	0	0	0	0	0	4	4
Van Buren	0	0	0	0	2	1	3
Alpena	0	0	0	0	0	1	1
Livingston	0	0	0	0	0	2	2
Allegan	0	0	0	0	1	0	1
Tuscola	0	0	0	0	0	1	1
Mason	0	0	0	0	0	1	1
Huron	0	0	0	0	0	1	1
Manistee	0	0	0	0	1	0	1
Cass	0	0	0	0	0	1	1
Mecosta	0	0	0	0	1	0	1
Kent	0	0	0	0	2	1	3
Ottawa	1	0	1	0	0	3	3
Oceana	0	0	0	0	1	2	3
Total Dec.	31	3,235	5	4	61	74	139
Total Nov.	27	9,100	3	3	56	89	148
Difference	4	5,865	2	1	5	15	9

OKLAHOMA FIELDS

(Continued from Page 44)

Company, farm— Location	Wells	Prod.
Pure:		
Brinson 24- 7-6	1	1,66
Cotcha 14- 7-6	10	3,66
Harjo 11- 7-6	4	77
Hollins 11- 7-6	1	27
Reiter-Foster:		
Dunyard 14- 7-6	4	1,55
Shaffer:		
Narcome 36- 8-6	2	9
Shell:		
Caesar 11- 7-6	1	7
Hotulke 23- 7-6	4	9
Jeffries 32- 8-7	1	1
Johnson 13- 7-6	3	1,52
Sinclair:		
Cosar 30- 8-6	3	1,10
Haney 12- 7-6	1	1
Tewee 14- 7-6	2	1,25
Sinclair & Kingwood:		
Pompey 24- 7-6	1	12
Skelly:		
Carl 14- 7-6	2	1,15
Slick:		
Chilcoat 9- 7-7	1	8
Harris 2- 7-6	1	
Reed 13- 7-6	2	2,20
Williams 15- 7-6	2	1,50
Wood 26- 7-6	1	30
Slick & Pine:		
Coker 1- 7-6	1	70
Snowden-McSweeney:		
Tiger 13- 7-6	3	1,65
Superior:		
Potulka 31- 8-6	1	1
Soketheche 1- 7-6	1	1
Texas:		
Brooks 25- 8-6	1	8
Coker 1- 7-6	3	50
Janey 11- 7-6	3	57
Texas & Independent:		
Hotulke 23- 7-6	4	1,35
Hotulke 22- 7-6	1	25
Tidal:		
House 1- 7-6	2	60
Johnson 1- 7-6	1	8
Twin States:		
Lowe 25- 8-6	1	10

Company, farm— Location	Wells	Prod.
Wigdon & Long:		
Jefferson 31- 7-6	1	35
Total	318	87,079

Maud Pool

Amerada:		
Gossland 8- 8-5	1	660
Hallum 1- 8-4	1	2,740
Barnsdall:		
Coker 11- 8-5	1	1,225
Fife 14- 8-5	1	1,280
Gypsy:		
Bourassa 7- 8-5	1	....
Coker 10- 8-5	1	....
Fife 14- 8-5	1	....
Miller 18- 8-5	1	....
Independent & Harding:		
Miller 18- 8-5	1	3,335
L. T. I. O.:		
Simpson 10- 8-5	1	49
State 16- 8-5	1	....
Pure:		
Lindly 18- 8-5	3	5,207
Prairie:		
Billington 11- 8-5	1	1,620
Campbell 18- 8-5	2	4,135
Sinclair:		
Bellars 19- 8-5	2	3,210
Harjo 11- 8-5	1	1,464
Total	19	25,335

Mission Pool

Carter:		
Fuswa 18- 8-6	1	50
Micco 8- 8-6	1	....
Gypsy:		
Baby 6- 8-6	1	15
Barkus 6- 8-6	1	....
Dosar 7- 8-6	1	457
Mission 5- 8-6	1	....
Mosar 1- 8-5	1	....
Marland:		
Maines 7- 8-6	1	50
Mid-Kansas:		
Moore 7- 8-6	1	50
Shell & Marland:		
Herndon 7- 8-6	1	....
Shell & Papoose:		
Maines 7- 8-6	1	....
Twin States:		
Hayes 8- 8-6	1	50
Total	12	672

Bowlegs Pool

Amerada:		
Roscoe 15- 8-6	8	1,220
Atlantic:		
Baker 10- 8-6	4	360
Fleet 23- 8-6	3	235
Grayson 13- 8-6	4	754
Jones, A. 16- 8-6	2	87
Jones, C. 9- 8-6	1	150
Barnsdall:		
McNac 28- 8-6	1	21
Murrow 11- 8-6	4	454
Carter Oil:		
Bowlegs 15- 8-6	4	730
Burden 23- 8-6	2	206
Harjoche 14- 8-6	6	598
Hilly 23- 8-6	3	365
Jones 11- 8-6	4	577
Walker 15- 8-6	4	530
Wise 23- 8-6	11	1,909
Dixie:		
Culley 11- 8-6	1	90
Empire:		
Lacy 14- 8-6	6	222
Wise 23- 8-6	2	227
Gypsy:		
Bowlegs 22- 8-6	1	225
Bradley 9- 8-6	1	5
Cumsey 10- 8-6	4	767
Grayson 13- 8-6	4	527
Harjoche 10- 8-6	3	709
Jones 11- 8-6	1	40
Walker 15- 8-6	7	969
Wise 23- 8-6	2	225
L. T. I. O.:		
Barnett 24- 8-6	2	278
Barnett "B" 23- 8-6	1	138
Billington 22- 8-6	5	197
Bowlegs 22- 8-6	10	1,629
Davis 13- 8-6	4	646
Fay 13- 8-6	9	1,515
Goforth 15- 8-6	12	1,178
Livingstone 15- 8-6	10	2,069
Lizzie 13- 8-6	3	249
Walker 15- 8-6	8	816
Williams 12- 8-6	1	213
Wilmott 15- 8-6	4	286
Worley 24- 8-6	1	78
Youngblood 24- 8-6	2	122
Magnolia:		
Davis 13- 8-6	3	359
Davis, M. 13- 8-6	1	165
Hammond 10- 8-6	8	599
Rhodos 12- 8-6	5	1,312
Van Buskirk 9- 8-6	3	730
McCulloch:		
Bowlegs 22- 8-6	2	230
Mid-Continent:		
Baker 10- 8-6	4	435
Smith 22- 8-6	1	4
Minnehoma:		
Bowlegs 12- 8-6	6	570
Prairie:		
Bowlegs 15- 8-6	1	335
Gahagan 23- 8-6	3	415
Harber 10- 8-6	8	2,120
Jones 11- 8-6	4	305
Templeton 12- 8-6	5	1,980
Whitney 23- 8-6	4	470
Pure Oil:		
Reed 14- 8-6	14	2,887
Strother "D" 11 & 14- 8-6	4	485
Strother "F" 10- 8-6	7	2,484
Roxana:		
Taylor 16- 8-6	5	75
Shaffer:		
Lacy 14- 8-6	3	380
Sinclair:		
Cumsey 10- 8-6	4	810
Ellen 11- 8-6	6	951
Harjo 14- 8-6	3	937
Jones 9- 8-6	7	410
Taylor 10- 8-6	4	705
Taylor, W. 10- 8-6	3	684
Walker 22- 8-6	4	1,395
Slick:		
Jones 3- 8-6	1	220
Texas:		
Reed 14- 8-6	11	1,015
Tidal:		
Grayson 13- 8-6	4	305
Harjoche 10- 8-6	6	1,110
Twin States:		
Jones 11- 8-6	1	....
Total	313	46,489

Earlsboro Pool

Amerada:		
Anderson 15- 9-5	2	413
Cowden 4- 9-5	7	1,074
Rogers 3- 9-5	2	112
Atlantic & Gypsy:		
Delaware 13- 9-4	1	....
Atlantic & Sinclair:		
Foreman 18- 9-5	1	130
Barnsdall:		
Brown 10- 9-5	4	1,420
Bruner, F. 2- 9-5	3	234
Bruner, N. 10- 9-5	3	1,099
Cudjo 14- 9-5	1	27
Davis, D. 11- 9-5	3	117
Davis, J. 11- 9-5	4	1,344
Davis, M. 11- 9-5	2	52
Gibson 9- 9-5	8	1,188
Hern 15- 9-5	1	1
Ingram 1- 9-5	8	726
Pack, S. 10- 9-5	4	144
Peter 10- 9-5	4	65
Sango 1- 9-5	4	2,072
Sebalka 16- 9-5	1	84
Sullivan, H. 11- 9-5	1	4
Sull-Harjo 10- 9-5	2	31
Wasutke 12- 9-5	4	960
Burke-Greis:		
Wisner 6- 9-6	2	820
Carter:		
Davis 13- 9-5	2	110
James 6- 9-6	5	3,455
Continental:		
Kays 2- 9-5	2	90
Spencer 12- 9-5	4	555
Empire:		
Barker 12- 9-5	1	40
Edmondson 3- 9-5	3	160
Empire & Amerada:		
Bullock 8- 9-5	1	527
Gypsy:		
Bruner 10- 9-5	4	2,070
Carter, B. 11- 9-5	8	2,527
Earl 16- 9-5	1	5
Hunick 5- 9-5	2	2,337
Noble 12- 9-5	4	1,255
Peter 10- 9-5	3	240
Sango 1- 9-5	13	1,140
State 16- 9-5	4	547
Independent:		
Bruner 10- 9-5	3	400
Sullivan 10- 9-5	1	20
Knapp 8- 9-5	3	1,116
Independent-Margay:		
Gains 11- 9-5	3	400
Magnolia:		
Bryant 9- 9-5	6	451
Cowden 4- 9-5	3	33
Dixon 12- 9-5	1	20
Edmondson 3- 9-5	1	5
Gilliam 13- 9-5	1	3,597
Holmsley 11- 9-5	7	408
Hyde 13- 9-5	1	864
Ingram 10- 9-5	1	15
Lena 10- 9-5	3	55
Seay 12- 9-5	9	2,521
Simpson 10- 9-5	4	310
Sparks 11- 9-5	6	468
Sullivan 12- 9-5	3	60
Mid-Continent:		
McCumber 9- 9-5	7	70
Rogers 5- 9-5	1	965
Mid-Kansas:		
Anderson 14- 9-5	2	60
Phillips:		
Dunaway 14- 9-5	1	25
Prairie:		
Baker 24- 9-5	1	65
Davis 13- 9-5	3	2,510
Graham, C. 3- 9-5	2	15
Graham, O. 10- 9-5	4	995
Stidham 11- 9-5	10	1,260
Roxana:		
Bayless 17- 9-5	1	10
Hearn 13- 9-5	1	117
Spencer 12- 9-5	2	1,216
Shaffer:		
Clark 1- 9-5	3	155
McCoy 36-10-5	1	577
Sinclair:		
Foreman 18- 9-5	1	15
Hollins 12- 9-5	1	40
Sango 2- 9-5	4	2,375
Skelly:		
Mays 1- 9-5	3	2,262
Shepard 6- 9-6	2	761
Spencer 12- 9-5	1	261
Skelly & Atlantic:		
Cherry 6- 9-6	2	1,443
Lottie 6- 9-6	1	967
Slick:		
James 6- 9-6	1	928
Slick et al:		
Campbell 6- 9-6	4	4,700
Superior:		
Ingram 1- 9-5	1	852
Walker 2- 9-5	3	2,043
Texas:		
Anderson 2- 9-5	8	203
Brown 10- 9-5	8	260
James 6- 9-6	2	260
Rogers 5- 9-5	5	1,960
Wilmott 10- 9-5	7	522
Tidal:		
Walker 35-10-5	3	1,990
Watkins 9- 9-5	7	2,080
Twin States:		
Barker 12- 9-5	3	63
Hern 2- 9-5	4	35
Total	294	69,906

Seminole Pool

Amerada:		
Fixico 23- 9-6	4	135
Killingsworth 23- 9-6	4	352
Rentie 23- 9-6	3	407
Atlantic:		
Cudjo, N. 35- 9-6	3	485
Barnsdall:		
Carter 24- 9-6	7	350
Henry 14- 9-6	2	497
Jones 34- 9-6	4	1,075
Carter Oil:		
B. Carter 24- 9-6	2	115
F. Carter 23- 9-6	3	85
Creamer 34- 9-6	2	7
Cudjo, R. 33- 9-6	4	185
Cudjo, W. 34- 9-6	1	30
Gilliland 27- 9-6	1	115
Grisso 23- 9-6	4	135
Grisso, M. 15- 9-6	1	115
Killings, G. F. .. 14- 9-6	4	50
Killings, M. E. .. 23- 9-6	12	4,900
Knapp 33- 9-6	1	40
Lukes 27- 9-6	5	1,025
Pounder 34- 9-6	2	160
Simpson 35- 9-6	2	202
Strothers 34- 9-6	4	480
Vierson 23- 9-6	2	35
Empire:		
Gross 25- 9-6	2	52
Wilson 34- 9-6	2	336
Gypsy:		
Butler 35- 9-6	4	757
Carter 24- 9-6	8	705
Cudjo 34- 9-6	4	205
Fixico 26- 9-6	7	155
Harjo 25- 9-6	3	610
Wolfe 26- 9-6	6	470
Independent:		
Fixico, P. 23- 9-6	3	540
Harjo 25- 9-6	2	120
Butler 35- 9-6	3	1,660
Fixico, T. 26- 9-6	6	312
Jones 26- 9-6	4	440
I. T. I. O.:		
Allen 25- 9-6	2	55
Bowlegs 26- 9-6	12	2,089
Goodin 23- 9-6	3	393
Harjo 23- 9-6	3	46
James 24- 9-6	2	159
Reed 24- 9-6	1	10
Kingwood:		
Johnson 22- 9-6	3	607
Magnolia:		
Boren 2- 8-6	1	4
Franks 25- 9-6	3	624
Mid-Continent:		
Rentie 14- 9-6	9	515
Tayeche 24- 9-6	7	210
Phillips:		
Strothers 27- 9-6	2	115
Prairie:		
Gross 25- 9-6	6	50
Mason 36- 9-6	1	55
Spencer 13- 9-6	1	7
Strothers 27- 9-6	8	2,005
Pure Oil:		
Strothers 26- 9-7	17	6,091
Strothers, B. 36- 9-6	4	1,220
Strothers, C. 34- 9-6	1	448
Roxana:		
Harber 22- 9-6	2	242
Lasley 22- 9-6	2	35
Sinclair:		
Carter 13- 9-6	2	22
Cudjo "A" 35- 9-6	6	935
Cudjo "B" 35- 9-6	4	765
Dicey 22- 9-6	2	505
Fixico 23- 9-6	4	730
Slick:		
Cudjo 35- 9-6	3	718
Franks 35- 9-6	6	1,024
Giblet 35- 9-6	3	1,491
Tiger 1- 8-6	1	42
Superior:		
Cudjo 35- 9-6	4	189
Texas:		
Mayhue 14- 9-6	1	220
Strothers 2- 9-6	1	120
Tidal:		
Carter 24- 9-6	4	352
Fixico 26- 9-6	6	876
Harjo 25- 9-6	1	160
Harjo, T. 23- 9-6	4	90
Turman:		
Cudjo 35- 9-6	4	451
Grisso 35- 9-6	1	95
Jones 34- 9-6	4	1,575
Total	282	42,682

Searight Pool

Amerada:		
Johnson 4- 9-6	1	39
Strothers 3- 9-6	2	757
Barnsdall:		
Jackson 5- 9-6	1	20
Carter:		
Davis 4- 9-6	6	300
Frazier 3- 9-6	6	2,140
Kiker 2- 9-6	1	20
Mandler 3- 9-6	2	10
Scott 26-10-6	1	13
Gypsy:		
Cudjo 4- 9-6	3	612
Mid-Continent:		
Grayson 34-10-6	6	50
Saloche 33-10-6	5	760
Mid-Continent & Homaoklа:		
Nevins 32-10-6	2	1,480
Pine:		
Lula 4- 9-6	1	22
Prairie:		
Cannon 33-10-6	1	4
J. Carter 10- 9-6	1	3
Houch 33-10-6	1	4
Kincaid 33-10-6	2	60
Wimer 22-10-6	1	17
Pure:		
Aldridge 3- 9-6	4	1,228
Roxana:		
Strothers 3- 9-6	4	237
Sinclair:		
Polly 3- 9-6	4	1,325
Superior:		
Varnum 4- 9-6	1	5
Texas:		
Fleet 4- 9-6	1	25
Twin States:		
Varnum 4- 9-6	2	60
Wilcox:		
Chupco 4- 9-6	8	569
Total	67	9,760

Totals

Field—	Wells	Prod.
Little River	318	87,079
Maud	19	25,335
Mission	12	672
Bowlegs	313	46,489
Earlsboro	294	69,906
Seminole	282	42,682
Searight	67	9,760
Grand total	1,307	281,901

Hughes County

Amerada Petroleum Corp.'s No. 1 Frederick, NW cor. NE NW, Section 5-7-8, is dry and abandoned at 4,984 feet in Wilcox sand.

Pontotoc County

La Salle Oil Co.'s No. 2 Bumpers, NE cor. Section 31-5-5, is drilling at 375 feet. Independent Oil & Gas Co. made location for No. 1 Chism, SE cor. NW SE, Section 20-5-7. Westheimer & Daube's rig is up for No. 9 Wade, NW cor. SE SW, Section 19-5-8, Allen Pool.

Louisiana Oil Refining Corp.'s No. 12 Perry, NE cor. Section 19-5-8, Allen Pool, has been abandoned at 2,900 feet in Cromwell sand. Shell Petroleum Corp.'s No. 1 Smith, NW cor. SW, Section 20-4-4, has been abandoned at 2,610 feet in Wilcox sand.

Pottawatomie County

W. B. Pine made location for No. 1 Smith, SW cor. NE, Section 8-8-5, Maud Pool. Gypsy Oil Co. has the cellar dug for No. 4 Miller, NW cor. NE SE, Section 18-8-5. Independent Oil & Gas Co. has dug the cellar for No. 4 Harding, SE cor. SW NW, Section 18-8-5. Marland Oil Co. and Shell Petroleum Corp. made location for No. 1 Everetts, NE cor. NW SW, Section 18-8-5. The Prairie Oil & Gas Co. is building the rig for No. 4 Campbell, SW cor. SE SW, Section 18-8-5. Mid-Continent Petroleum Corp. made location for No. 1 Shelton, SW cor. SE NE, Section 18-8-5. W. B. Pine made location for No. 1 Linger, SW cor. NE, Section 18-8-5.

Pure Oil Co. staked location for No. 4 Lindley, NE cor. NW SE, Section 18-8-5. Sinclair Oil & Gas Co. is moving the rig in for No. 8 Bellars, SW cor. NE NE, Section 19-8-5. Magnolia Petroleum Co. made location for No. 5 Robbins, SW cor. SE, Section 15-7-4, St. Louis Pool. Sinclair Oil & Gas Co. made location for No. 1 Nesbit, NE cor. SE NW, Section 18-7-5. T. B. Slick is building the rig for No. 1 Wolfe, NW cor. SE, Section 18-7-5. Shaffer Oil & Refining Co. is preparing to deepen No. 1 Tolon, NE cor. SE SW, Section 30-7-5. The cellar has been dug for No. 4 Tolon, SE cor. Section 30-7-5.

Shaffer Oil & Refining Co.'s No. 4 Cherry, SE cor. Section 23-7-4, has been completed for 2,117 bbls. in Wilcox sand at 4,330-68 feet. Magnolia Petroleum Co.'s No. 3 Wilbarn, SW cor. NW SE, Section 24-7-4, swabbed 372 bbls. from Simpson sand at 4,113-19 feet. Westheimer & Daube's No. 5 Fried, SW cor. SE NW, Section 24-7-4, swabbed 770 bbls. from Simpson sand at 4,240-52 feet. McCulloch Oil Co.'s No. 3 Smith, SW cor. NW SE, Section 25-7-4, was completed for 580 bbls. in Simpson sand at 4,108-53 feet.

The Prairie Oil & Gas Co.'s No. 4 Ellison, SE cor. NE SW, Section 25-7-4, made 455 bbls. from Wilcox sand at 4,390-99 feet. Mid-Kansas Oil & Gas Co.'s No. 4 Gesselman, NE cor. SW NW, Section 25-7-4, swabbed 420 bbls. from Simpson sand at 4,200-62 feet. The Texas Company's No. 3 Cherry, NE cor. NW NW, Section 25-7-4, flowed 1,430 bbls. from Wilcox sand at 4,318-32 feet. No. 4 Cherry, NW cor. Section 25-7-4, flowed 4,080 bbls. from Wilcox sand at 4,236-56 feet. Magnolia Petroleum Co.'s No. 1 Cherry "B," SE cor. NE, Section 26-7-4, was completed for 735 bbls. in Simpson sand at 4,295-4,420 feet.

Pure Oil Co.'s No. 2 Thomas, CNL NE NE, Section 26-7-4, flowed 2,822 bbls. from Wilcox sand at 4,272-4,303 feet. No. 3 Thomas, NE cor. Section 26-7-4, produced 3,730 bbls. from Wilcox sand at 4,201-39 feet. Indian Territory Illuminating Oil Co.'s No. 2 Weams, NW cor. SW, Section 21-7-5, drilled to 4,355 feet in Simpson sand and after plugging back to 4,334 feet and shooting made 30 bbls.

Shell Petroleum Corp.'s No. 1 Smith, SW cor. NW, Section 21-7-5, had Wilcox sand at 4,181-83 feet and swabbed 795 bbls.

Seminole County

Independent Oil & Gas Co. is moving rig material in for No. 1 Alexander, SE cor. SW SW, Section 31-10-6, Earlsboro Pool. Skelly Oil Co. made location for No. 2 Gross, SE cor. NW SW, Section 36-10-5. Shaffer Oil & Refining Co. is building the rig for No. 3 McKoy, NE cor. SW SW, Section 36-10-5. T. B. Slick and Skelly Oil Co.'s No. 8 Campbell, NW cor. NE NW, Section 6-9-6, is moving in material. Skelly Oil Co. and Atlantic Oil Producing Co.'s No. 3 Lottie, NE cor. NW NW, Section 6-9-6, is a cellar.

Barnsdall Oil Co. has the rig on the ground for No. 2 Coker, NE cor. SE SW, Section 11-8-5, Mission area. Location has been made for No. 3 Coker, SE cor. NE SW, Section 11-8-5. No. 4 Coker, NE cor. SW, Section 11-8-5, is a celiar. Location has been made for No. 5 Coker, NW cor. NE SW, Section 11-8-5. The cellar has been dug for No. 6 Coker, SW cor. NE SW, Section 11-8-5. No. 7 Coker, NW cor. SE SW, Section 11-8-5, is a cellar. No. 8 Coker, NE cor. SW SW, Section 11-8-5, is also a cellar. Empire Oil & Refining Co. has the cellar dug for No. 2 Cluck, NW cor. SE, Sec-

tion 11-8-5. No. 3 Cluck, SW cor. NW SE, Section 11-8-5, is also a cellar.

Sinclair Oil & Gas Co. has the rig on the ground for No. 2 L. Harjo, NW cor. SW SE, Section 11-8-5. Location has been made for No. 1 Bean, SE cor. NE NW, Section 11-8-5. The Prairie Oil & Gas Co. has the rig up for No. 4 Billington, SE cor. NW SW, Section 11-8-5. The rig for No. 5 Billington, NE cor. SE NE, Section 11-8-5, is being built. No. 6 Billington, SE cor. SW NW, Section 11-8-5, is also a rig under construction.

T. B. Slick and W. B. Pine made location for No. 2 Coker, SW cor. Section 1-7-6, Little River Pool. Mid-Continent Petroleum Corp.'s No. 2 Eleck, SE cor. NE SE, Section 23-7-6, is making 50,000,000 feet of gas from 1,800 feet after the pipe was shot during plugging operations. Magnolia Petroleum Co. made location for No. 1 Glass, SW cor. NE NE, Section 26-7-6. Pure Oil Co. staked location for No. 3 Brinson, SE cor. NW SW, Section 24-7-6.

Mid-Continent Petroleum Corp. is moving in rotary tools for No. 3 Smith, SW cor. NW NE, Section 5-7-7, East Little River Pool. Producers & Refiners Corp. is digging cellar for No. 2 Lustey, SE cor. NE NW, Section 5-7-7. Sinclair Oil & Gas Co.'s No. 2 Amos "C," SE cor. NE SW, Section 7-5-8, Allen Pool, is rigging up to deepen. Gypsy Oil Co.'s No. 15 Sango, C NE SE, Section 1-9-5, Earlsboro Pool, pumped 91 bbls. from Wilcox sand at 4,526-37 feet. Carter Oil Co.'s No. 6 James, SE cor. NE SW, Section 6-9-6, made 1,740 bbls. from Wilcox sand at 4,366-80 feet.

Harris and others' No. 1 Harris, SE cor. NW, Section 30-9-8, is dry and abandoned at 4,582 feet in Wilcox sand. The Prairie Oil & Gas Co.'s No. 5 Gibson, NE cor. SW NW, Section 14-7-6, Little River Pool, has been abandoned at 4,828 feet in Wilcox sand. Barnsdall Oil Co.'s No. 3 Hotulke, SE cor. NE SE, Section 22-7-6, was completed for 340 bbls. in Wilcox sand at 4,240-50 feet. The Texas Company's No. 3 Lucy, NW cor. SE SE, Section 18-5-8, Allen Pool, made 510 bbls. from Cromwell sand at 2,510-90 feet.

Logan County

J. E. Crosbie and Twin State Oil Co. moved the rig out for No. 5 Shaffer, NW cor. SW NW, Section 20-19-4w, Roxana Pool. Shell Petroleum Corp. is digging cellar and ponds for No. 2 Rouse "A," NW cor. SW, Section 20-19-4w. No. 2 Rouse "B," NW cor. NE NE, Section 19-19-4w, was completed for 1,050 bbls. in Wilcox sand at 6,209-45 feet.

Shell Petroleum Corp. has the rig on the ground for No. 2 Shaffer, NE cor. SE NE, Section 19-19-4w, Roxana Pool. Sinclair Oil & Gas Co.'s No. 3 Weber, SW cor. SE SE, Section 18-19-4w, made 1,043 bbls. from Wilcox sand at 6,135-65 feet. J. E. Crosbie and others' No. 3 Shaffer, SW cor. NW, Section 20-19-4w, flowed 2,160 bbls. from Wilcox sand at 6,066-6,108 feet.

Oklahoma County

Indian Territory Illuminating Oil Co. has the rig on the ground for No. 1 Bodine, C NW SE, Section 24-11-3w, Oklahoma City Pool.

Canadian County

Wirt Franklin Petroleum Corp. and Indian Territory Illuminating Oil Co.'s No. 1 North, C NE NE, Section 18-13-10w, has set surface pipe at 65 feet.

Creek County

Mid-Continent Petroleum Corp.'s No. 29 Stewart, NE cor. NW SE, Section 15-17-7, is spudding. Bengal Oil Co. has the rig up for No. 10 Tiger, SW cor. NW SW, Section 17-17-7. Shaffer Oil & Refining Co. made location for No. 5 Cain, SE cor. NE SE, Section 18-17-7.

Bengal Oil Co.'s No. 7 Tiger, SE cor. SW, Section 17-17-7, Drumright Field, made 135 bbls. from sand at 2,657-2,710 feet. No. 8 Tiger, NE cor. SW SW, Section 17-17-7, was completed for 700 bbls. in sand at 2,715-42 feet.

Grant County

Argo Oil Co.'s No. 1-A Lane, NE cor. Section 27-27-3w, Deer Creek Pool, has been abandoned at 4,330 feet.

Kay County

Marland Production Co. is building the rig for No. 1 Shimp, C NE NE, Section 18-29-1.

Lincoln County

Texas Pacific Coal & Oil Co. made location for No. 1 Seabo, NW cor. Section 19-16-5. Mid-Continent Petroleum Corp. moved the rig out for No. 1 Tipton, SE cor. NE NW, Section 13-15-5.

Cotton County

Shasta Oil Co.'s No. 3 Chambers, NE cor. SW NW, Section 2-2s-10w, is rigging up rotary tools. Jenkins and others' No. 2 Record, NW cor. NE SW, Section 6-2s-10w, has been abandoned at 2,130 feet. Shasta Oil Co.'s No. 2 Chambers, NW cor. SW SW NW, Section 2-2s-10w, made a 21-bbl. well in sand 2,171-79 feet.

Kiowa County

Ford, Foster & Duncan's No. 1 Finney, NW cor. SW SW SW, Section 8-6-16w, is drilling at 300 feet. Aregood and others' No. 1 Finney, NW cor. SE SW, Section 8-6-16w, Gotebo Pool, has been abandoned at 501 feet. Russell & Sloan's No. 1 Rushton, NE cor. SW SE, Section 6-5-14w, is dry and abandoned at 1,524 feet.

Osage County

Phillips Petroleum Co. has the rig on the ground for No. 17, C SE, Section 2-27-5. The rig has been moved out for No. 17, C NE, Section 12-27-5. No. 17, NW cor. SW SE, Section 21-25-12, is a machine. Mid-Co Oil Co. has a machine at the location for No. 3, NW cor. SW SW, Section 24-21-8. Clint Moore Estate's No. 7, NE cor. NW NW, Section 16-21-9, is spudding.

Phillips Petroleum Co.'s No. 17, NW cor. SE NW, Section 12-27-5, had Burbank sand at 2,990-3,013 feet, drilled to 3,022 feet and has been completed for an air hole. Lewis Production Co. and others' No. 1, SE cor. Section 15-26-6, made 447 bbls. naturally the first 17 hours from Burbank sand at 2,947-92 feet.

Stephens County

Harry Hanbury's No. 8 Taliaferro, NW cor. SW SW, Section 27-1s-8w, is rigging up. Atlantic Oil Producing Co. has the rig up for No. 2 Taylor, SW cor. NW NW, Section 12-1s-4w. Magnolia Petroleum Co.'s No. 2 Hanson, NW cor. SW NE, Section 12-1s-4w, has been completed for 90 bbls. in sands at 2,958-3,254 feet. Wirt Franklin Petroleum Corp.'s No. 6 Brittain, NW cor. SE, Section 12-1s-4w, made 180 bbls. from sands at 2,915-3,254 feet.

Carter County

The Texas Company's rig is up for No. 2 Eaves, SW cor. Section 24-1s-3w. Magnolia Petroleum Co. has the rig up for No. 3 Johnson, NW cor. SW, Section 33-1s-3w. Schermerhorn Oil Co. and others' No. 2 Jolliff, NW cor. NE NE NW, Section 24-5s-1, is a rig. Schermerhorn Oil Co. and others' No. 7 Crockett, NW cor. SE NE, Section 22-1s-3w, made a 40-bbl. well in sands at 2,462-2,615 feet. Sinclair Oil & Gas Co.'s No. 5 Dougherty, SW cor. SE NE, Section 29-2s-3w, was completed for 39,000,000 feet of gas in sand at 2,657 feet.

Marshall County

Ward Merrick's No. 1 Null, NE cor. NW NW, Section 24-5s-5, has been abandoned at 767 feet.

Muskogee County

Sioux Oil Co. moved a machine to the location for No. 3 Jordan, NW cor. SE SE SE, Section 14-13-18. Mills & Hall moved a machine out for No. 1 Brown, NW cor. SE NE, Section 19-13-19. Durham & Smith's No. 1 Wilkins, NE cor. NW, Section 19-13-19, is drilling at 850 feet. J. L. Slusher has a machine on the location for No. 1 Heckman, NW cor. Section 22-13-19.

Mack Drilling Co.'s No. 1-A Friday, SE cor. NE, Section 7-15-15, made 200 bbls. from sand at 1,180-1,206 feet. Babcock Brothers' No. 4 Barnett, SE cor. NW NE, Section 8-15-15, was completed for 75 bbls. in sand at 1,588-94 feet. C. O. Buckles' No. 1-A Simmons, SW cor. SE NW, Section 9-15-15, is dry and abandoned at 1,736 feet.

H. L. Jolly's No. 1 Crabtree, SE cor. NE, Section 2-14-18, is dry and abandoned at 1,158 feet. J. R. Graves and others' No. 5 Flowers, C SE NW, Section 5-13-16, made 30 bbls. from sand 1,834-51 feet. P. O. Miller and others' No. 1 Jackson, SE cor. NE NW, Section 8-13-16, has been completed for 35 bbls. in sand at 1,643-55 feet. E. D. Glasco's No. 1 Dean, SW cor. NE NW, Section 7-13-18, is dry and abandoned at 2,032 feet.

Okmulgee County

Unger Brothers' No. 8 Harrison, C SE SW, Section 24-15-14, is rigging up. Becker & Hutchinson's No. 2 Berryhill, NE cor. NW NW, Section 8-14-13, is spudding. J. K. Gardner and others moved a machine to the location for No. 2 Fixico, CSL NW SE, Section 9-14-13. R. E. Garrett has the rig up for No. 1 Sneed, SW cor. SE NW, Section 9-14-13.

Kirkland & Son's No. 1-A Depriest, C SE NE, Section 19-15-13, is dry and abandoned at 2,277 feet. Unger Brothers' No. 7 Harrison, SE cor. SW, Section 24-15-14, made a 6-bbl. well in sand at 1,546-81 feet. Riney & Williams' No. 4 Stevens, NW cor. SW SE, Section 9-14-14, has been shut in for 6,000,000 feet of gas in sand at 1,710-15 feet. Star Development Co.'s No. 5 Scott, NE cor. NW SE NE, Section 15-13-14, made 10 bbls. from sand at 1,363-70 feet. W. B. Pine's No. 1 Henry, SE cor. NE NE, Section 30-12-13, made 20 bbls. from sand at 2,228-37 feet.

Wagoner County

Elk Drilling Co.'s No. 7 Childers, NW cor. SW NW, Section 22-18-17, made 5,250,000 feet of gas from sand at 779-93 feet. Horner and others' No. 1 Kidd, CSL NW NW, Section 22-18-17, was completed for 1,500,000 feet of gas in sand at 805-17 feet. Peterson & Young's No. 1 Marshall, SW cor. NW, Section 24-16-16, is a dry hole at 990 feet. H. W. Kiskaddon's No. 2 Howard, NE cor. SW NE, Section 8-15-16, is dry and abandoned at 1,410 feet.

ROCKY MOUNTAIN AREA

(Continued from Page 53)

Butte district there is a small output of anthracite, but there have never been any large veins opened up in the State and most of this hard coal comes from the Far East and is very expensive. The Continental Oil Co. has four strings of tools working in Fremont County.

In Jefferson County, near Denver, the Ruby Hill Oil & Gas Co.'s No. 1 Braden, Section 14-4s-69, resumed today after being shut down for the holidays and is drilling at 670 feet (corrected).

In Montrose County, on the western slope, the Uncompahgre Oil & Gas Co.'s No. 1 Colorado Title & Trust, Section 27-50-10, near Olathe, is drilling again after setting casing at 1,450 feet. This well had a show for about 1 bbl. of paraffin base oil per day in the Sundance, the oil coming through a hole full of water. This has been shut off and the next objective is the Shinarump conglomerate expected at around 3,000 feet. The operation is being financed by local people and has attracted considerable attention.

Larimer County

In Larimer County, the Union Oil Co. of California has only two wells drilling, both of which are on the Wellington Dome. One of these, its No. 4 Gault-Piatt, NW NE, Section 7-9-68, is drilling at 4,270 feet and probably will be completed before the properties are formally transferred to the Continental Oil Co. The other is its No. 2 Elder, SW NE, Section 18-9-68, drilling at 2,160 feet.

The Producers & Refiners Corp.'s No. 1 Hendershot, Section 2-6n-86, on the Pole Mountain anticline in Jackson County, is still shut down at 1,900 feet and probably will not resume until spring. All of the Continental Oil Co.'s wells in Jackson County are shut down for the winter.

In El Paso County, the Grand Union Oil Co.'s No. 1, Section 19-17-67, southwest of Colorado Springs, is drilling at 2,540 feet and carrying the 6⅝-inch casing. The hole is now through the crevice which had to be filled and cased and is in good condition. It has only 160 feet to go to reach the objective, the Harding sand of Pennsylvanian age.

In Arapahoe County, the McDeb Drilling Co.'s No. 1 Fitzsimmons, Section 7-4s-66, will remain shut down at 3,660 feet until after the first of the year. It was generally supposed that this operation was affiliated with the Associa Industries, Inc., a holding company w wide ramifications in real estate and i dustrial lines, but it is stated there is connection between these concerns that the failure of the Associated I dustries will not affect the company.

Major Petroleum, Inc.'s No. 1 Bla wolf, Section 7-2s-43, in Yuma Coun eastern Colorado, is drilling at 915 f and carrying the 15½-inch. A gas h zon is expected at 1,450 feet and the tentions are to run the 12½-inch to t top of the sand and pull the larger str without setting.

Routt County

In Routt County, the Texas Prod tion Co.'s No. 4 Belle Dennis, Sect 7-6n-86, Tow Creek Dome, has chang over to cable tools and is cleaning o and swabbing. Total depth is 3,957 f Same company's No. 1 State-Oliver, S tion 18-6-86, is bottomed at 3,165 f and cleaned out at 3,100 feet, and No. 6 Quaintance-Hocking, SW NE, S tion 18-6-86, probably will not spud til No. 1 State-Oliver is completed tools released.

In Moffat County, the Texas Prod tion Co.'s No. 5 Walter Wick, Sect 10-4n-91, Moffat Dome, is sidetrack 6¼-inch casing at 4,266 feet, with a to depth of 4,596 feet, and its No. 11 Know ton, Section 33-5-91, is bottomed at 1 420 feet and waiting for mud. On t Iles Dome, the Midwest Refining Co. No. 3-SD Shaw, NE NE, Section 2 4n-92, is drilling at 3,145 feet in gre shale, and its No. 24-SD Parkinson, NW, Section 22-4-92, is bottomed at 2 613 feet and underreaming to lower t 10-inch. The Texas Production Co.'s N 36 Lloyd, SE cor., Section 21-4-92, the 10-inch at 2,742 feet and is standin Thomas McLaughlin and others' No. Williams, NW SW, Section 2-3n-92, drilling at 800 feet.

Wyoming

The Texas Company and the Whi Eagle Oil & Refining Co., both of whi operate refineries at Casper, we awarded the contract for the Gover ment's royalty oil from the Salt Cre Field by the Secretary of the Inter on a joint bid of 21¾ cents per barr premium over posted prices. Previous the taking of this action Secretary W had rejected all of the bids opened December 10 in which W. L. Walls, Cheyenne, Wyo., made the highest off of a premium of 42 cents, on the grou that it would be unwise in the pub interest to accept Mr. Walls bid. T apparently grew out of the uncertain as to whom Walls represented, if an body, and his ability to handle the co tract. After the former bids had be rejected, the Secretary then asked t Midwest Refining Co., the Continen Oil Co., the Prairie Oil & Gas Co., a The Texas Company and White Eagle & Refining Co. to submit bids, they bei the only companies considered in a po tion to handle the oil. Midwest a Prairie bid the posted price and t Continental company did not submit offer. The Texas Company and Wh Eagle Co. renewed their former bid a were awarded the contract. The contra becomes effective as of January 1 an plans are now being worked out by t two companies for handling the oil. A. Bermingham, vice president of t Texas Production Co., is out of the c and no statement of its plans is yet ava able. It is probable, however, that t two companies will submit bids for least a part of the equipment and sto age on the Teapot Dome Naval Reser which was taken from the Mammoth Co. Bids for this property will be open on January 7 by Lieut. Com. C. J. Texell, United States Navy, inspector charge. Equipment includes a pump st tion, more than a mile of 8-inch lin two 55,000, two 64,000, and seven 80,000-bbl. tanks.

Wyoming Wildcats

Little progress was reported this we on most of the Wyoming wildcats on a count of the Christmas holidays. In Li coln County, in the western part of t State, the Midwest Refining Co.'s No. Section 25-37-117, on the Little Gr River structure, is drilling again and

(Continued on Page 138)

Downward Movement in Chicago

Several Major Refiners Reduce Price to 8 Cents. Lower Prices Named by Others. Trade Was Light Monday

By J. B. Waldo

CHICAGO, Dec. 31. — There was a general downward adjustment of gasoline prices on Monday morning in this market. Several of the major refiners reduced their price on U. S. Motor gasoline to 8 cents and other gravities were quoted in line with the new price for the U. S. Motor grade. This reduction came as a surprise, not that it is out of line with the actual market but because of intimations that the 8½-cent price would be held. Other refiners and marketers who had been selling at 7¾ cents met the new price and quoted large buyers 7½ cents. A lower price than this was stated by some of the large local distributors to have been named to them for immediate business. Trade was light on Monday in light oils and even the demand for furnace oils was only fairly active as the weather continues unseasonably warm and bright, good for gasoline but not for heating oils.

There was little doing in kerosene and prices were unchanged from last week.

A real scarcity is claimed for the low sulphur high gravities in zero fuel oils and these are strongly held. Distillates moved fairly well and some advances of an eighth of a cent were made by refiners who advanced their lowest prices to the average of the market. Gas oils in the kind desirable for furnace oils were also in demand and moved as largely as any other similar product on Monday. Prices continued strong. For the industrial gas oil there was less demand with most sellers naming 2½ cents, but 2⅝ was quoted by some. The heavy fuel oils were dull at unchanged prices.

Consumption Large

Consumption over this territory is large for the season of the year. The Northwest is particularly favored as compared with last year. A year ago the snow came early and blocked traffic on the highways. Before it had melted cold weather came and then more snow and there was a small consumption of gasoline. This year the weather has been mild and the roads open. The result is that some of the largest distributors report a gasoline gallonage double that of a year ago. There are some sections of the territory where they have had too much rain and the dirt roads are bad but generally speaking for the territory as a whole there is a decided increase in consumption over a year ago, an increase in excess of that which would naturally follow from the added number of cars in use. This fact is, of course, relative and it must not be thought the consumption is at all equal at this time to that of August or even of October. The shorter days and the dark nights deter many from using their cars more than a few hours each day. With more and even better hard roads, length of days will be of more importance than the temperature.

While the average oil man is moving very cautiously as to any expansions and as a matter of fact many are not spending money in some instances for really needed improvements, there is a real expansion going on with the larger integrated companies. One of these, not a Standard Oil organization, is purchasing stations right along and is credited with a program that calls for 100 new stations in Michigan and 60 additional stations in Wisconsin. These are to be company-built and owned stations. Another of the well known integrated companies is negotiating with quite a number of distributors, some local and others in other parts of this territory. A third is quietly but methodically adding to its stations and is also buying when it sees a good opportunity. There is even a report which has some evidence to support it, that one of the Atlantic Coast integrated companies is securing distribution in the so-called Standard of Indiana territory through some subsidiary organizations which are favored by freight rates. It begins to look as if there might be during the coming season or at some time in the near future a real battle of the giants, unless they agree to pool their activities through the huge merger which is so commonly discussed and talked about. There is absolutely no definite information obtainable by the public regarding this giant of mergers but there is a general belief that there is something to it, possibly on the theory of where there is so much smoke there may be some fire. It is also possible that the old saying regarding the mountain and the mouse may come in very pat, when the facts are made known.

Adding Outlets

This much is certain that every prominent and sizable organization is doing everything possible, is working every plan to add to its outlets and to its gallonage. Not only are stations being bought and built but they are being leased and the terms offered to some sizable distributors for the lease of their stations are sufficiently attractive to cause many dealers to consider the leasing of their station at least with favor. This desire for new outlets and additional gallonage on the part of those companies which have practically unlimited capital at their command is a rather curious condition in the industry. It is only a few months since a survey was made which showed, if it showed anything, that there were at least three times as many gasoline outlets as were needed to serve the public adequately. That the oil industry had a much better year in 1928 than in 1927 was mainly due to the restraint exercised in the producing and refining departments of the industry. Leaders admit there is still too much crude produced or producible at very short notice from shut-in wells and from proven but yet undrilled areas. It is also admitted that stocks of crude above ground are excessive and that the refining capacity is far greater than is needed to produce all the gasoline that can possibly be consumed. The crude production and the refining capacity of the nation has been increased more rapidly during 1928 than the consumption and now the number of outlets is to be radically increased with the thought that each will add to its gallonage by taking away from the other fellow, not to meet an unfilled demand.

Course of Market

The course of the gasoline market last week in this city might be considered as a potent argument against expansion. The larger refiners were holding 8½ cents as their bottom open market price for U. S. Motor gasoline. This was on a par practically with the price under the present contracts, and in some instances the spot market price was less than the contract guaranteed margin which would enable dealers under these contracts to exercise their option of the spot market price. A further decline would throw much of the contract business upon the spot market quotation. This may have been one of the reasons why the major refiners decided to hold their open price at 8½ cents. Another was that they hoped the recent reduction in refinery runs and the general buying that sometimes follows the beginning of the year would strengthen the market so that price would be the low quotation for the season. Early January business may not be as large as expected by some. Many of the large distributors have already placed orders for their full January requirements and some owners of contracts have bought quite largely in excess of their contracts and not, in most cases from their contract refinery. These are mostly the larger dealers who buy direct at the bottom of the market. Several of these stated they bought for their January requirements at 7½ cents, Group 3 basis.

These prices represented the extremes of price for U. S. Motor gasoline in this market last week. Little gasoline of this grade moved at over 8 cents and that to small buyers who had permitted their supplies to run close and had to have prompt delivery. One marketer with a good selling organization stated that he had a few cars, seven or eight, that cost 8 cents which they tried to sell at 8⅛ and at 8 cents and finally offered at 7¾ cents to get rid of them and even then they were slow to sell. There was little activity during the week, just filling orders but it is debatable if there will be any great activity over January in this territory. Many of the large dealers have supplied their requirements in advance and others have bought in addition to their contract requirements. The smaller traders are either buying on contract or in the market from time to time as they need the gasoline. They may need more than they expect if the weather continues bright and the roads open, but so many seasons the weather is fine up to January 1, and changes suddenly to severe winter weather during the first week in January. Refinery shipments should be active for at least the first half of the month.

Spot Market Prices

Just what to call the spot market prices is rather puzzling under present conditions. The larger refiners are holding for 8½ cents and selling a few cars. Several local offices admit they are not selling a spot car of gasoline a day on the average. The bulk of the spot sales made early last week were 7⅞ to 8⅛ cents but towards the close the selling was at 7¾ cents to 8 cents and the bulk at the former. There are some criticisms made of the quality of this less expensive gasoline but some of it comes from reliable Oklahoma and North Texas plants. Perhaps as good a test of the quality is that there have been no more than the average of complaints and few rejections on account of quality. There have been some on account of delays on deliveries even when the delay was the fault of the buyer who waited too long before placing his order. The price quoted direct to large buyers such as leading distributors and for resale by several responsible refineries at the close of the week was 7½ cents, which is a low price and rather near to the cost of the material. It should strengthen a little as soon as the inventory period has been passed for it was admittedly given to secure some substantial quantity of business when orders were very hard to secure, at least for any quantity.

There was really very little call for the higher gravities. Some business came from the Northwest but it was too warm and the present qualities of the U. S. Motor gasoline are too high to make the higher gravities large sellers. The situation to the East, in Ohio and eastern Indiana and southeastern Michigan, continues badly unsettled. In Ohio the Standard Oil Co. of Ohio was quoting 11.75 cents delivered in any part of the state but was reported to be meeting competition and a good deal of material was being moved to buyers in that State at 11.30 cents delivered. This was not the bottom price as a quotation made that figured 11.19 cents from a Group 3 refiner was stated to be too high. A large distributor at Toledo also stated that he had bought for January on the basis of 7½ cents Group 3, but not from a refiner in the group. The intrusion of eastern and southern refiners into the State continues and the local refiners are fighting for the business with the outside plants.

Kerosene Inactive

Kerosene continues inactive. There is some business, just scattering cars but no large buying. The offerings are not suggestive that stocks are large and reports indicate there has been little accumulation of supplies. Refiners generally are holding their former prices which range from 5½ to 5¾ cents. There is only an occasional sale of the 42-44 gravity at around 6 cents.

The milder weather has had the result of backing up the demand for distillates and other grades of furnace oils. The demand for the zero gas oils was more active than for distillates during the past week. Several leading burner manufacturers report their business has been good, fully up to expectations and that they are continuing to receive orders for new installations. The smaller burners for houses of not more than eight rooms has been featured in the sales campaigns and have proved popular. The more reasonable prices as well as the deferred payment plan has had much to do with the added business. The volume of furnace oil consumed is gradually increasing and distributors who cater to the business from the home owners are having a good season which they expect will be much better a little later. Their business is really in a better condition than that of concerns who cater to the larger class of structures which use a zero fuel oil. Here there is still a greater deal of competitive price cutting. Of late the demand in the furnace oil group has changed somewhat, the largest business being done in the gas oils compared with distillates. The market is strong for all suitable furnace fuel oils and supplies, while fairly ample, are not excessive at all and are rather scarce in the really desirable oils. There are plenty of zero oils with a low flash but they are often dark and not sweet and there are some supplies of sweet clean oils which have a rather high flash and so it goes. Distributors who are experienced in the business are very careful in buying their material for use as fuel for domestic oil burners.

Gas Oil Steady

The ordinary U.G.I. or industrial gas oil is moving steadily but not briskly. Many gas companies are well supplied while others are still buying for immediate use. The price is a little more firm as to tone but really no higher than a week ago. The higher gravities in fuel oils, free from sulphur, free flowing and with a desirable flash are strong. On the other hand the heavy industrial high sulphur oils are dull and rather easy in price. Some recent attempts to secure higher prices do not seem to have been very generally successful. At least the buyers are securing the same prices for their present purchases in a number of instances. There was very little new business in heavy fuel oil placed last week. Inquiries were few and generally it was dull. The season of the year is blamed for this condition for the basic industries are well supplied with orders in many lines. There is always a lull during the latter part of December and the beginning of January but the major industries are entering they believe upon a good year. The railroads are large buyers of steel and the steel industry as a whole sees a good season for the first part of 1929. There are some indications of less activity in building and

(Continued on Page 127)

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80 ACRES ROYALTY $5 to $20 in one to four interesting West Texas locations. Resale service, drilling bulletins, new locations reports. NATIONAL ROYALTIES, Box 1214-B, Wichita Falls, Texas.

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Will sacrifice 640 acres of land in Fee or any part thereof, for $2.50 per acre. Write Box 1601, Fort Worth, Tex.

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For leases around well at reasonable prices or interest in drilling block, write or wire the Imperator Oil Corporation, 3rd floor Petroleum Bldg., Fort Worth, Texas.

NO STOCK FOR SALE.

LEASES—PRODUCTION

$3 to $5 per acre for West Texas land with Oil and Mineral right 40 acres up. New Mexico oil leases. Winter garden lots and truck farms on easy terms; agents wanted. A. Poe, 829 Wilson Bldg., Dallas, Texas.

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Tulsa, Oklahoma

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WANTED small bonus and drilling contract on two acre lease in Valley Center, Kansas. E. Fackler, Manchester, Kansas.

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The Oil and Gas Journal,
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Gentlemen:

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Very truly yours,

W. C. BROOKS.

Eastern Refiners Had Good Year

Gasoline Gallonage Creates New Record With Promise of Good Demand in 1929. Mild Winter Weather an Aid

By Special Correspondent

NEW YORK, Dec. 31.—Lubricating oils again hold the spotlight in the East Coast refinery products market this week. Prices have advanced materially, and in several instances the market is so closely sold up that prices are little more than nominal. Heavy export buying, coupled with a generally sold-up position of the cylinder oil market, has been the cause of the pyrotechnics in this division of the trade.

Mild weather has made for continued heavy consumption of motor fuel, but has reacted against the demand for kerosene and furnace oils, creating an easier market for the former product. Export gasoline was held unchanged at principal East Coast markets, but it was expected that the market would ease off on completion of deliveries on standing contracts unless the situation at the Gulf should show improvement. The Gulf market is now under a parity with the local market on both Navy and the higher gravities.

Early reports on 1928 sales indicate record gallonage for gasoline during the year, and preliminary reports on other products also show gains over previous years, notably on business booked for shipment abroad. And, what is more to the point, earnings of refiners and marketers on this business have averaged better in the year just closing than was the case during the previous two or three years. This improvement is expected to continue into the new year.

Gasoline

Gasoline business has been holding up well this week, mild weather stimulating consumption. Marketers continue to quote U. S. Motor at 11 cents a gallon in tank car lots, and report an active jobbing demand. While it is too early for definite data on sales totals for the year, leading interests in East Coast territory expect their final reports to show record gallonage for the year.

Steady weakening in the market position in Group 3 has not as yet affected the local market, although the easing off in export gasoline at the Gulf is expected to force East Coast refiners to shade their prices to meet this competition when demand picks up. Refiners are still making export shipments on high gravity motor fuels sold some time ago, however, and thus see no necessity for any immediate price cutting. Navy gasoline is the weakest item in the list, in so far as export markets are concerned.

Production of gasoline at East Coast refineries is showing seasonal curtailment and refiners are making an effort to avoid the accumulation of large surplus stocks. They are moving California gasoline eastward in good volume to take care of their premium gasoline business.

Tank Wagon Gasoline

The local tank wagon gasoline market continues at 18 cents a gallon, in the face of recent price cuts in New England, the South Atlantic States, and other parts of the East Coast territory. There is a good demand reported. Retail distributors in the metropolitan territory are almost uniformly adhering to a 2-cent differential between the tank wagon and pump price, although in isolated instances dealers still hang on to the old 3-cent margin.

Premium gasolines have eased off a little in demand this week, the warm weather having cut into consumption somewhat. Refiners continue to list their special motor fuels at 3 cents a gallon over the quotation on U. S. Motor, or whatever grade they adopt as their tank wagon quality. These gradings differ, some sellers delivering 60-62 as their tank wagon quality.

Lubs

The market on Pennsylvania lubricating oils this week is highly reminiscent of the post-war boom days, in so far as violence of price fluctuations is concerned. Refiners who are normally not more than an eighth of a cent away from each other in list prices now show variations of as high as 2 cents a gallon, and the market on several grades is little better than nominal.

Buyers for export report that some grades of cylinder stocks are practically unobtainable in the field, and prices paid for spot car lots are sharply over recent price levels, advances of as much as 7 or 8 cents a gallon for the past month being shown.

Prices quoted in the car-lot market, f.o.b. Bayonne this week are as follows: Steam refined cylinder stocks, 600, 30 cents a gallon; 635, nominal at 31 cents; 650, 34 cents a gallon; 600 Pennsylvania flash, 38 cents; 630 flash, 42 cents; 600 Warren E, 35 cents a gallon; 600 Oil City E, 34 cents; bright stocks 140-150, light, 46 cents a gallon; dark, 44 cents a gallon.

Several of the big companies are reported to have gone out into the field during the past month and bought up spot lubs in large quantities, to take care of their own export requirements, as well as to round out their stocks for domestic distribution. In addition, it is believed that a number of export operators a month or so ago sold short for shipment abroad, anticipating a downward price reaction after the upward move of the closing quarter of the year. These short sellers are now being called upon to make good on their deliveries, and are being forced into the market to cover at whatever prices they can to fulfill their contracts.

Operators in Pennsylvania lubs are being kept closer to their offices this week than for years past. Not only is the market showing a day-to-day fluctuation equal to or greater than usual weekly price flurries, but the market on some grades is changing almost hourly, representing the conflicting price views of some refiners. While the belief is expressed here that the present situation is but temporary, and that the market may be expected to ease off shortly, some interests are of the opinion that the market may settle around present levels. Refiners evidently hold the latter view, to judge by the paucity of offerings for later delivery, and operators here are being compelled to turn down inquiries from abroad for later positions, pending some stabilization of the domestic market situation.

Red and pale oils have not reflected the activity in cylinder stocks, and the market for these grades has been rather sluggish during the greater part of the week, no price changes developing.

Kerosene

There has been some let-down in the demand for kerosene in the tank car market here during the week, although refiners continued to quote water white unchanged at 9 cents a gallon. Mild weather during the week was responsible in part for the curtailed inquiry, jobbers carrying sufficient oil in their storage to take care of the limited demand reaching them and being unwilling to add to their storage until business is more active. Stocks of kerosene at East Coast refineries are fairly liberal, but there do not appear to be any distressed holdings around, and the quoted price is being adhered to on the part of the leading interests. The tank wagon quotation is unchanged at 15 cents a gallon in New York territory, having gone through the entire year at that level. Recent reductions in Standard of New Jersey and Atlantic Refining Co. territories have not as yet been reflected in the market in this section, although it is felt that some readjustment of the schedule, in line with changes in other sections of the East, may be witnessed in the near future. While demand from the tank wagon is rather dull in New York City territory this week, reports from New England note a rather heavy demand for the fuel, due to the sharper weather prevailing in that section. The tank car market in New England is also showing considerably more activity than is the case with the trade in local and nearby territory.

Paraffin Wax

Operators in paraffin wax have been looking for an advance in spot paraffin, in line with the higher lubricating oil market ruling at Pennsylvania refinery points, but no increase has materialized. On the contrary, a few soft spots have developed here and there, and some shading on spot business is reported. This condition is by no means general, however, and generally involves but isolated car lots sold by their holders to bolster their cash position for the year-end report.

Domestic consumers have been largely out of the market this week. Refiners do not want to trade futures, and due to inventory work at their plants, consumers do not want to buy spots. A stagnant market is the natural result.

Export inquiry has been about the only activity during the week. Foreign buyers evidently share refiners' views as to the bullish outlook for the near future, and are picking up stocks wherever available at attractive prices. While, as stated above, some concessions have been reported in scattered instance, no general change sufficient to warrant any revisions in the quoted price basis have materialized.

Traders are somewhat inclined to look for a slow start of the selling campaign for 1929. Buyers are covered for their immediate requirements, and are expected to test out the stability of the present market before coming in for supplies in a large way. At best, however, it is felt that such a policy will have only the effect of retarding a further upswing in prices, which some operators appear to regard as inevitable. However, the current position of the market is so uncertain that there is a minimum of speculative interest.

Petrolatum

In common with paraffin, the petrolatum market has turned sluggish, during the progress of the annual inventory taking at the plants of consumers. However, it is reported that considerable petrolatum is now rolling on orders already booked, and an early resumption of buying is anticipated. While refiners are carrying a fair amount of business on their books for shipment during the first half of January, they have not booked beyond that period to any great extent, notwithstanding the inquiry for later periods which has developed within the past several weeks.

New business in export channels has not been of impressive proportions this week. Foreign buyers were quite active in the market during the first half of the month, but buying slowed down after mid-minth and there has been very little inquiry this week. Sellers expect an early revival in export interest, however.

Prices remain firm on all grades of petrolatum.

Fuel Oil

Demand for Bunker "C" fuel oil has been well maintained throughout the week with the market holding steady at $1.05 a barrel, in bulk, f.o.b. local refinery terminals. Considerable interest attaches to the situation in this branch of the market, in view of the shipping board contracts which go into effect here and at other Atlantic Coast ports tomorrow. Under the terms of these contracts, wh[ich] are held by the Gulf Oil Corp., the [sh]ipping board vessels will obtain th[eir] Bunker "C" under $1 a barrel, bar[ge] alongside. Large contracts with the [B]ritish, French and other shipping co[m]panies carry a provision for a hig[her] price, and the differential between [the] shipping board contract figure and [the] price specified in contracts to other li[ners] is not sufficient to permit the other bu[yers], under the terms of their contra[cts] to buy fuel oil in the open market. I[n] deed, it is very much of a questi[on] whether or not any of the larger refine[ries] would cut the market, in as much as th[ey] are all in pretty much the same positi[on] with respect to their contracts, and a[ny] cutting of prices would mean nothing b[e]yond the shifting of contracts about, wi[th] a lower net return for all. Even a[t] $1.05 a barrel at refineries the refine[ries] have been dissatisfied with their return on Bunker "C" fuel oil sales for seven[al] months past. The big shipping boa[rd] contracts which Gulf holds give that co[m]pany a ready outlet for their fuel o[il] production from their Venezuelan cr[ude] which they are running so largely.

Weather conditions have been rath[er] moderate during the week, and the d[e]mand for furnace oil has sagged a litt[le]. Refiners look for a good volume durin[g] the first quarter of 1929. There ha[s] been relatively little real cold weath[er] thus far in the winter season, but ev[en] so, refiners' sales of furnace oil are ru[n]ning substantially in excess of those f[or] the corresponding months of 1927. [A] real prolonged cold snap, it is felt, wi[ll] give the trade in the East Coast a re[al] record gallonage in furnace oil.

Gas Oil

The leading refiner continues to hol[d] 32-36 gas oil at 5¼ cents a gallon, wit[h] others quoting this grade down to 5 t[o] 5⅛ cents. For 28 plus, the market i[s] quoted as low as 4½ cents, although 4[¾] to 5 cents comes closer to the actual ma[r]ket on this grade. The lower grades ha[ve] been moving readily into consumption a[s] furnace oils, although contract with[-]drawals are a little lighter this week, du[e] to the milder weather.

Refiners report a good demand fro[m] the large gas companies in this area, mo[st] of this business consisting of deliveri[es] against standing contracts. In ma[ny] cases, the contracts carry over into 192[9]. There has been comparatively little ope[n] market buying of gas oil by the big arti[fi]cial gas sellers in this district during the past fortnight.

The recent advance in gas oil quotations in the Mid-Continent has given th[e] East Coast market a better tone. Re[-]finers here are finding a ready outlet fo[r] their production of this oil, and the move[-]ment from California has fallen away following the recent receipt of several cargoes of Pacific Coast gas oil which was moved into consumption as furnace oil. While the present market here is favorable to the merchandising of gas oil from other refinery centers, operators generally prefer to concentrate on East Coast production to protect their home markets, which have been quite stable for several months back.

Export Markets

France continues the principal factor in the export gasoline market. Inquiries for two cargoes at the Gulf are reported this week. The first, of 6,000 tons, is made up of 4,000 tons of 64-66 and 2,000 tons of Navy. The other, for 8,000 tons involves 2,500 tons of 64-66 and 5,500 tons of Navy. The market at the Gulf has been lowered to 8¾ cents for Navy, 10½ cents for 60-62 390 endpoint, and 10¾ cents for 64-66 375 endpoint. Export buyers, however, are endeavoring to beat these prices. Export quotations re-

main unchanged in the local market, with small-lot trading the chief feature.

There has been little change in the kerosene situation. Cased burning oil is firm, and is moving in a good way. Bulk kerosene is held here at 7½ cents for prime white and 8¾ cents for water white, with the market at the Gulf held at 6¾ cents for prime and 7¾ cents for water white. England has been a fair buyer of kerosene, with cased oil moving in a fair way for shipment to the Orient.

Gas and fuel oils have been coming in for a little better inquiry for shipment abroad, due to the low prices ruling in American markets. Gallonage on these products, however, does not approach in importance kerosene, gasoline, lubs, or other major products.

Heavy buying of cylinder oils has featured the export lubricating oil market during the week, details appearing in an earlier part of this report.

Refiners in this area are optimistic regarding a continued heavy volume of export trading during the new year. The export corporation, which has already received the endorsement of leading factors in the industry, and which will shortly come into being, is expected to guide the industry in developing further export outlets and holding markets already acquired against the expected keener world competition, particularly from South American production. Export operators are awaiting with interest formal incorporation of the export group and promulgation of the operating methods which will be pursued by the new group.

Petroleum Exports

The following table shows principal exports of petroleum and refined petroleum products from New York during the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	Dec. 22	Dec. 15	Dec. 8
Gasoline	197,500	1,896,800	27,000
Naphtha	1,600,000	2,430,000	146,400
Kerosene	364,700	760,800	100,800
Fuel oil	260,700	403,800	2,600
Lubricating oil	2,429,600	2,766,000	903,300
Petroleum, refin'd	554,000	2,169,800	1,408,000
	Pounds		
Petrolatum			190,500
Paraffin wax	1,434,800	1,393,500	1,726,600
Refined	32,500	2,169,800	259,300
Scale	543,100	431,500	85,800
Lub. grease	933,300	1,641,000	572,600

There were a number of large shipments reported cleared from this port during the week ended December 22, including the following: Paraffin wax, 435,800 pounds on the Gothenburg for Gothenburg, 226,800 pounds on the Helen for Marseilles, 445,900 pounds on the Commack for Buenos Aires and 224,200 pounds on the Gudmundra for Santos; lubricating oil, 739,200 gallons on the General Gassouin for Rouen, 554,000 gallons on the same vessel for the same port, 98,500 gallons on the Gudmundra for Santos; petroleum, refined, 340,000 gallons on the New Brooklyn for African ports; benzine, 553,100 gallons on the Aral for Plymouth; lubricating grease, 132,100 pounds on the Hinnoy for Marseilles; kerosene, 334,000 gallons on the Aral for Plymouth; fuel oil, 227,700 gallons on the Sagorapack for Hoyanger; naphtha, 400,000 gallons on the Aral for Plymouth, 111,000 gallons on the New Brooklyn for Dakar, 265,000 gallons on the New Brooklyn for other African ports, and 113,000 gallons on the Gudmundra for Montevideo.

Diesel Oil

Routine trading in Diesel oil is reported this week. Refiners are quoting the market unchanged at $2 per barrel in bulk, at Bayonne refineries. Refiners have completed their sales campaign on contracts for 1929, and report that gallonage has shown sizeable gains over orders on hand at this time last year.

Competitive conditions in the Diesel oil market are favorable. The large gallonage business is "sewed up" by the larger refiners with facilities for taking care of the heavy requirements of transatlantic ship operators, and there is not the same competition for business in this line as must be met in marketing other products.

California Oil Receipts

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended December 22 totaled 369,000 bbls., a daily average of 52,714 bbls., against 227,000 bbls., a daily average of 32,428 bbls. for the week ended December 15, and a daily average of 59,571 bbls. for the four weeks ended December 22.

	(Bbls. of 42 gals.)
At Atlantic Coast Ports—	
Boston	92,000
New York	66,000
Philadelphia	116,000
Others	95,000
Total	369,000
Daily average	52,714

Distribution of total California oil receipts is as follows:

Gasoline	274,000
Kerosene	95,000

According to reports from Los Angeles the following cargoes have cleared that port for the East Coast since last week's report:

To New York, 73,600 bbls. of gasoline on the Lightbourne.

To Providence, 96,400 bbls. of gasoline on the Yankee Arrow.

To Philadelphia, 77,350 bbls. of gasoline on the Bohemian Club.

To Richmond, 118,400 bbls. of crude oil on the F. H. Hillman, 65,300 bbls. of crude oil on the J. C. Fitzsimmons, and 156,000 bbls. of crude oil on the D. G. Schofield.

According to reports current in local market circles, the movement of California gasoline to the local market, and to Philadelphia and other North Atlantic ports as well, is expected to show considerable acceleration within the next several weeks, with a heavy movement scheduled for the first quarter of 1929. Comparatively little of this motor fuel will find its way to the jobbing market, however, in as much as the bulk of it will be moved for the account of the large integrated companies and will move to consuming channels through their own marketing departments, and their own controlled or owned filling stations in most instances.

Imports

Imports of crude and refined oils at the principal United States ports for the week ended December 22 totaled 1,736,000 bbls., a daily average of 248,000 bbls., compared with 1,706,000 bbls., a daily average of 243,714 bbls. for the week ended December 15 and a daily average of 261,286 bbls. for the four weeks ended December 22.

	(Bbls. of 42 gals.)
At Atlantic Coast Ports—	
Baltimore	175,000
Boston	69,000
New York	820,000
Philadelphia	271,000
Others	70,000
Total	1,405,000
Daily average	200,714
At Gulf Coast Ports—	
Galveston district	90,000
New Orleans and Baton Rouge	168,000
Port Arthur and Sabine district	73,000
Total	331,000
Daily average	47,286
At All United States Ports—	
Total	1,736,000
Daily average	248,000
Daily average four weeks	261,286

Included in the week's arrivals of crude oil at this port during the week ending December 22 were the following shipments:

To Standard Oil Co. of New Jersey, 78,000 bbls. on the Malabar from Tampico and 100,000 bbls. on the Gedania from Mamomal.

To Pan American Petroleum & Transport Co., 71,800 bbls. on the George G. Henry from Aruba, 69,000 bbls. on the Mirlo from Aruba, and 85,500 bbls. on the R. W. Stewart from Aruba.

To Gulf Refining Co., 65,000 bbls. on the Belridge from Las Piedras and 97,500 bbls. on the Agwimex from Las Piedras.

To Anglo-Mexican Petroleum Co., 54,250 bbls. on the San Dunstano from Curacao.

To Tide Water Oil Co., 94,850 bbls. on the Axtel J. Byles from Las Piedras.

To Asiatic Petroleum Co., 44,850 bbls. on the Cape St. Agnes from Curacao.

DOWNWARD MOVEMENT IN CHICAGO MARKET

(Continued from Page 123)

the auto outlook while spoken of most enthusiastically as to number of cars to be sold is less impressive as regards the profits in the business owing to price wars or to attempts to furnish too good a car at the price. The railroads have done well and should do as well in 1929, possibly better. The industrial use of fuel oil is increasing and with the fear of an oil shortage removed should do still better, gradually obtaining a still wider market.

The 18-22 fuel oil zero cold test but high in sulphur is still being sold direct at 50 cents a barrel in this market by a leading refiner although some are asking 52½ cents for no better material. For the 24-26 of the same quality, the price is 60 cents from this refiner with others asking 62½ cents. The same specifications with less than three-fourths to 1 per cent sulphur will command a premium of from 5 to 10 cents a barrel according to the quality of the oil and other conditions. For the 28-30 low sulphur, low flash fuel oil there is a steady and large demand and the prices are strong at 92½ cents to $1.00 with some asking still higher prices. The same gravity with an ordinary cold test is quoted at 85 to 90 cents.

Lub Demand Light

The lubricating oil demand has been light. Some Mid-Continent and nearer refiners are contracting for next season but their business last week was light. The market for bright stocks and for steam refined stocks continued strong. The demand for motor oils from distributors was light and the industrial business rather neglected.

Reports on Contracts

There has been little change in the actual condition in the distributing end of the industry. Few new contracts are being closed partly because of the time of the year. The refiners claim they have renewed their old contracts and added to the number and it would be interesting to know on what terms the old contracts were renewed. Some dealers claim they have been able to renew on the former basis. On the other hand there are many dealers who have stated positively that they have not renewed on any basis and are buying or will buy in the open market from month to month or from time to time. One large Chicago company is stated to have begun the open market plan of buying and it actually placed its order for its January requirements, 75 cars, last week, with a refinery at Eldorado. The new Triple A contract which is being offered by some of the major companies is proving attractive.

It will be seen there is a good deal of shifting around in the industry as to the methods of procuring supplies. The gallonage is good but not generally to the extent claimed by some. Concerns that are increasing the number of their outlets naturally show a larger increase over last year than do those who are operating the same number of stations. According to the report of the American Petroleum Institute for October, the consumption in 35 states showed a gain over the corresponding month of last year of 11.6 per cent and 4.7 per cent less than September. The increase for the 10 months ending with October, 1928, was 11.5 per cent, compared with the same months in 1927. These figures would indicate an increase for the year of between 11 and 12 per cent, possibly a little over 12 per cent as the gallonage has been good during November and December owing to favorable weather. Not every distributing company has had a share in this increase. One of our major companies indicated an increase of 25 per cent in its business judging by figures obtainable to date which include the first half of December. Evidently this company has made at least one-half of its gain by taking business away from other competing concerns, partly through added outlets and partly through superior sales efforts.

Tank Wagon Scale

There have been very few changes in the tank wagon scale and none recently in any large place. Most have been simply minor adjustments. In most cases the change has consisted of a reduction of the station price to the same point as the tank wagon price. At very few places has the price been restored to normal after the cut was made. There is a feeling that there are liable to be some important changes after the beginning of the year but there is nothing on which to base this sense of an impending change except the feeling of uncertainty which naturally results from the many changes in conditions, some of them basic, which took place last year. Quite a number of jobbers have stated it as their belief there would be a determined effort made to increase prices of practically all commodities during the next few months but to advance prices and to hold the new prices when made is quite a different matter. Several refiners are today asking 8½ cents for their U. S. Motor gasoline while others are selling at a cent less. With increased demand this difference will grow less and possibly disappear, provided the supply is kept at a point below the actual consumption. It is possible to estimate with sufficient correctness the quantity of gasoline that may be consumed next year, also the exports. The success of any movement to stabilize prices at the present or at any higher point depends on the willingness and ability of the refiners to maintain a level of production that will not be materially in excess of that demand.

MAGNOLIA PRODUCTION 103,400 GALLONS DAILY

The natural gasoline production of the Magnolia Petroleum Co. now exceeds 100,000 gallons daily. The company, which is one of the largest producers and buyers of crude oil in the Mid-Continent Field, has 32 plants located in Louisiana, Texas, Oklahoma and Arkansas.

The company operates both compression and oil absorption type plants with several, a combination of the two types. The following table gives an up-to-date check on the natural gasoline operations. Several changes have been made during the past few months in plant locations and capacities.

Natural Gasoline Plants—Magnolia Petroleum Co.

Location and type of plant*—	Cap.
Arkansas	
Section 7-16s-15w, C	6,216
Louisiana	
Section 24-21n-15w, A and C	2,495
Section 28-10w-21n, A	15,000
Section 12-12n-11w, C	1,396
Oklahoma	
Section 32-8n-8e, C	2,064
Section 5-7n-8e, C	1,978
Section 6-19n-6e, C	1,544
Section 17-20n-6e, A and C	**2,850**
Section 33-1s-3w, A and C	1,350
Section 23-2s-3w, C	4,134
Section 15-14s-3w, C	1,000
Section 9-17n-7e, C	2,436
Section 7-18n-7e, C	3,000
Section 34-16n-7e, A and C	3,142
Section 29-18n-5e, C	460
Section 34-15n-5e, A and C	4,411
Section 19-15n-8e, A and C	795
Section 26-9n-6e, A and C	5,583
Robins, J. M., C	.....
Texas	
Sumner-Hamilton, C	4,550
Burnett Ranch Oil Co., C	220
Adams, C	300
Owens-Chalk, A and C	598
Magnolia-Garcia, C	130
Harris, C	4,840
Mertens-B, A and C	2,328
Worley, A	1,920
Horlacker, A	.....
Hardin, A	4,767
Morris, A and C	**360**
Carruth C	.....
Caruth, C	15,000
Brown C	.....
Sullivan, C	.....
Rush, C	7,000
Stiles, C	60
Fee 244, A and C	2,200
Total	103,447

*C—Compression; A—Absorption.

VENEZUELAN OIL CONCESSIONS

V. O. C. Holing Co., Ltd., which controls practically all the share capital of Venezuelan Oil Concessions, Ltd., has received an arbitration award in connection with the sale of crude oil by Venezuelan Oil Concessions to Royal Dutch Co. Accounts for 1927 will be prepared as soon as possible.

LEGAL

NOTICE OF SALE OF NAVAJO TRIBAL OIL AND GAS LEASE

On January 30, 1929, at ten o'clock a.m., at Shiprock, New Mexico, there will be offered for sale at Public Auction for a cash bonus in addition to royalty on production, an exploratory oil and gas mining lease covering a tract of approximately 1,440 acres, Townships 30 and 31, North, Range 17 West, on the Chimney Rock Structure, Navajo Indian Reservation, New Mexico. Full information may be obtained from B. P. Six, Superintendent of the Northern Navajo Agency, Shiprock, New Mexico.

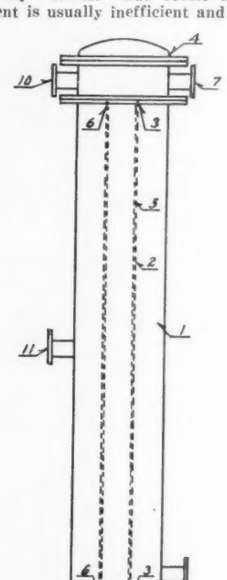
Practical Suggestions in Refining

By W. T. Ziegenhain

Greater Flexibility Is Claimed for New Type of Oil Filter

Off color gasoline remains as an aggravating problem though considerable progress has been made in treating methods. Because the problem presents itself so unexpectedly at times it is common to find some type of a gasoline filter in practically all plants. If the plant manufactures lubricating oil and is equipped with filters it is general practice to turn over one of these to gasoline service when needed but where there are no regular filters, small tanks, short runs of large pipe and many other pieces of odd equipment are utilized.

Ordinarily the equipment is thrown together hastily to "get out of the hole." Then when the emergency is over, the equipment stands idle until the next "emergency" comes. The result is the equipment is usually inefficient and after



it has been used a few times proves to be a very costly proposition.

In those plants not having regular lub equipment there is no earth recovery system and the cost of new earth soon mounts to a large figure. Ordinarily from 1½ to 2½ pounds of earth are used per barrel of gasoline filtered. When figured in terms of the cost per car of 8,000 gallons the average cost is $5 per car the cost of earth representing about $2, labor $2 and losses of oil and steaming about $1. While the figure of $5 per car does not appear much as an individual item, a single 55,000-bbl. tank of off-colored gasoline will bring the cost of filtering at this rate to more than $1,000 and this represents only a week's loadings during the summer months for many refiners. Often-times it is the trimming of these unusual expenses that represents the difference between a profitable operation and an unprofitable operation at the end of the year.

New Type Filter

A rather new departure from the general method of filtering gasoline is discussed by Harley Cannon in the Southwestern Bulletin issued by the South-

(Continued on Page 138)

DESIGN STILL TO SECURE LARGE YIELD OF ANTIKNOCK GASOLINE

In an effort to increase the yield of gasoline direct from the crude and to raise the antiknock value of their production, some refiners are investigating the practicability of heating the crude to temperatures considerably above that needed to distill the straightrun gasoline during the topping operation to approach conditions best for vapor phase cracking. To what extent this may be developed has not yet been determined but arrangements similar to the one sketched below have been suggested and is expected to increase the yield of gasoline during the initial distillation from 15 to 25 per cent of itself. The problems of coking up the pipe still, treating the resultant gasoline relatively free of gum, holding down the gas losses and the patent situation immediately present themselves. Despite these hazards, the problem proves to be an attractive one just at the present time and many of the difficulties that first presented themselves are now solved.

Probably of most importance is the design of the pipe still. To maintain a temperature of 1,000 to 1,200 degrees Fahrenheit, which is necessary to hold the heavy fractions in the vapor phase, exceptionally good materials must be used in the construction of the still and special attention paid to the lining of the fire box and the weight of the tubes. It has also been found of material help in holding down the formation or accumulation of coke in the tubes, to gradually increase the size of the tubes as the oil travels through the still. The rapidity with which the size should be increased does not seem to be constant for all crudes or charging stock and needs to be determined experimentally to gain optimum conditions.

Likewise, the arrangement of the tubes is of considerable importance. Local heating and the chance of hot spots must be brought to a minimum. The high velocity of the oil through the still tends to keep any carbon in suspension but once formed it will be damaging elsewhere if not in the still and a balance between the rate of charging, amount of recycling, if practiced, and the time the oil remains in the still after it reaches cracking temperatures can be found which will produce very little carbon and once the optimum conditions are determined, this portion of the operation becomes simple.

Another factor of importance in the design of the tube still is the arrangement and design of the "super-heater" tubes. These are the last tubes in the still and are for the purpose of vaporizing the fractions heavier than gasoline and raising the vapors to the relatively high temperatures. These are located in the immediate path of the fire which makes hot spots more likely to form. Sweeping bends and smooth joints are essential.

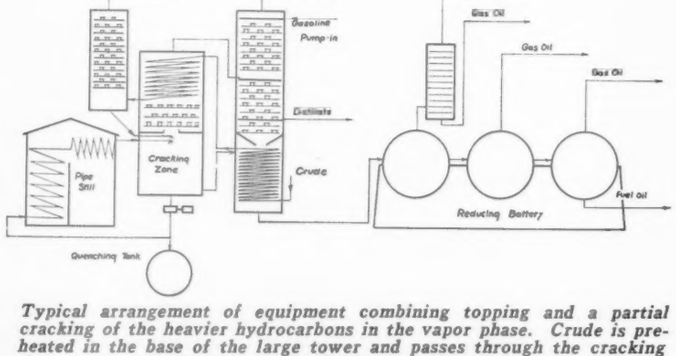
Expansion Drum

After the oil has been heated to the very high temperatures it is run to what might be termed an expansion drum but it has more than the ordinary separatory duty to perform. It is here the cracking takes place and the degree of cracking is controlled in part. As the hot vapors and liquid from the still pour into this cracking zone it is found helpful in keeping down gas formation to chill the stream with the raw charging stock. The theory in chilling is that at the high temperature, certain hydrocarbons break down in a rapid series of steps to finally form permanent gases whereas chilling retards this rapid and extreme breaking down.

Due to the introduction of the raw oil into the cracking zone, the temperature is lowered several hundred degrees and because of the heavy duty placed on the still, recycling is the most practical means of operating. This calls for a hot oil pump. If the system cokes up, this pump is the first part of the equipment to be affected. Sometimes a provision is made whereby a portion of the hot oil taken from the bottom of the cracking drum is run through a heat exchanger and then to storage as fuel or as a cracking stock for pressure stills after settling. This provides for a continuous operation.

The volume of oil in excess of the amount recycled passes over into the base of the large fractionating tower where it preheats the crude and any light fractions remaining in the topped crude has a chance to liberate themselves here. From the tower the topped crude passes to a battery of shell stills or to pressure stills if desirable.

Tracing the flow of the incoming crude, it enters the system at the base of the large tower where it is preheated by the topped crude and then it passes up through the top of the cracking drum where it is preheated to a higher temperature. By this time it has been sufficiently heated to vaporize all of the normal yield of straightrun gasoline and because of the ease with which this can be treated compared to the vapor phase gasoline it is passed into a separate expansion drum and tower. This stream is collected and treated separately, the unvaporized portion passing into the cracking zone as the "chilling" medium.



Typical arrangement of equipment combining topping and a partial cracking of the heavier hydrocarbons in the vapor phase. Crude is preheated in the base of the large tower and passes through the cracking drum as a control medium. Straightrun gasoline and vapor phase distillate recovered separately.

Recent Patents

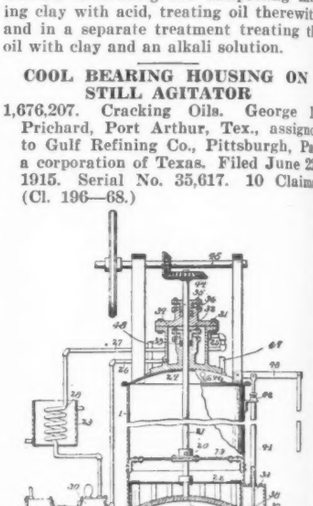
ACID AND CAUSTIC USED WITH CLAY

1,695,198. Process for Clarifying, Decolorizing and Neutralizing Oils. Davis R. Merrill, Berkeley, Calif., assignor to Union Oil Co. of California, Los Angeles, Calif., a corporation of California. Filed February 1, 1926. Serial No. 85,382. 39 Claims. (Cl. 196—147.)

A process of decolorizing and neutralizing oleaginous substances including petroleum lubricating oils comprising mixing clay with acid, treating oil therewith, and in a separate treatment treating the oil with clay and an alkali solution.

COOL BEARING HOUSING ON STILL AGITATOR

1,676,207. Cracking Oils. George L. Prichard, Port Arthur, Tex., assignor to Gulf Refining Co., Pittsburgh, Pa., a corporation of Texas. Filed June 22, 1915. Serial No. 35,617. 10 Claims. (Cl. 196—68.)



1. The process of cracking petroleum hydrocarbons which comprises maintaining in a still a body of such hydrocarbons under cracking temperature and pressure while withdrawing and condensing vapors of cracked products, agitating the oil by a stirring device in the still operated by a shaft passing outside the still through a packing enclosed in a closed housing and circulating through the housing a fluid under pressure.

OXYGEN INTRODUCED TO CRACK

1,694,092. Art of Converting Hydrocarbon Oils. Oswald C. Brewster, Casper, Wyo., assignor to Standard Oil Co., Whiting, Ind., a corporation of Indiana. Filed June 20, 1925. Serial No. 38,513. 11 Claims. (Cl. 196—65.)

3. The method of converting hydrocarbon oils which comprises maintaining a body of oil under pressure at conversion temperature by supplying into said body of oil controlled quantities of oxygen containing gas, removing vapors evolved from the body of oil, preheating fresh oil to conversion temperatures, contacting the preheated fresh oil with the vapors evolved from said body of oil, and subsequently feeding it into said body of oil.

RECLAIM CLAY WITH WATER

1,694,971. Treatment of Spent Clays. Robert A. Dunham, Long Beach, Calif., assignor to Union Oil Co. of California, Los Angeles, Calif., a corporation of California. Filed October 30, 1926. Serial No. 145,379. 9 Claims. (Cl. 196—147.)

1. A method of de-oiling spent clay obtained from oil treating process comprising bringing the spent clay into intimate contact with an experimentally determined optimum quantity of water above or below which the separation of oil from the clay is diminished.

(Continued on Page 166)

Brief Items for Petroleum Refiners

Standard of Ohio Buys Refinery at Latonia, Kentucky

The Standard Oil Co. of Ohio through purchase has acquired the 2,000-bbl. refinery of the Petroleum Refining Co. located at Latonia, Ky. With the purchase the Ohio Standard announced the organization of a subsidiary company to be known as the Latonia Refining Corp. which will operate the refinery.

The refinery which at present is shut down will be rebuilt and enlarged so that it will have a capacity of 5,000 bbls. daily. It is expected that operations will be resumed about May 1. A pipe line connecting the refinery with the pipe line system of the Illinois Pipe Line Co. of Indiana is to be built immediately.

The Latonia refinery, which is located on the Ohio River across from Cincinnati, will supply the stations of the Standard in the south part of Ohio. It has been known for some time that the company desired to provide a source of supply for its stations and jobber trade in the south part of the State.

The company at present has two large refineries on Lake Erie located at Toledo and Cleveland. The freight rates to the south part of the State are relatively high and the company was at a disadvantage in competing with low priced gasoline obtainable from Mid-Continent points especially the North Louisiana area.

The distribution of the Ohio Standard at present is confined to Ohio. In the event the company widens its marketing area as is being done by several of the Standard companies the Latonia refinery is well located for distribution in Kentucky and other states bordering on the Ohio River.

The refinery at Latonia has been shut down for several years. It consists of 2,000-bbl. shell still skimming equipment and one 1,000-bbl. Cross cracking unit.

CHICAGO MOTOR CLUB NOW FAVORS TAX IN ILLINOIS

CHICAGO, Jan. 2.—The Chicago Motor Club which was foremost in opposing the Illinois gasoline tax which was declared illegal has changed its position regarding the gasoline tax. Charles M. Hayes, president of the club, states that the club believes that the gasoline tax is correct in principle and that it is now apparently necessary in this State to complete the good roads program.

The club will not, he stated, favor a tax greater than 2 cents per gallon.

It is understood that bills already prepared for presentation to the legislature at its January session contemplate at least a 3-cent tax. Mr. Hayes believes that the tax of 2 cents should be divided, 1 cent to go to the counties to be spent for the widening of the present roads in the congested areas and the other cent to be added to the fund provided by the bond issue of $100,000,000 for the completion of the program of road building laid out following the bond issue. Counties where the traffic did not require wider roads would be allowed to use its share of the funds for the building of additional roads instead of widening those already built.

SINCLAIR BUYS STATIONS

CHICAGO, Dec. 29.—The Sinclair Refining Co. has purchased 10 of the stations owned and operated by the Bartles-Scott Oil Co. of Wilmar, Minn. This is in line with the expansion program which the Sinclair interests are developing in this territory. The Sinclair Refining Co. is quite active in increasing the number of its outlets in Michigan and Wisconsin.

WHITE STAR STARTS WORK ON THREE MILLION DOLLAR DETROIT REFINERY

The White Star Refining Co. during the past week started construction work on its new 6,000-bbl. refinery located at Detroit, Mich. The plant which will cost approximately $3,000,000 is one of the largest of the 1929 refinery projects now under way. The company expects to have the refinery in operation by July.

The refinery will consist of three pipe stills, two large cracking units, a power plant and all the necessary storage for crude oil and refined products. The site consists of 60 acres at West and Allen roads near Trenton. The site adjoins the Detroit, Toledo & Ironton Railroad which is owned by Henry Ford. The plant is ideally located both for rail and water transportation and in the midst of one of the largest gasoline consuming centers in United States. It is the first refinery project in the Detroit area. The closest refineries are located at Toledo and Saginaw, Mich. The Standard Oil Co. of Indiana built a small skimming plant at the latter point during the past year.

The White Star company has been a large refiner and marketer of petroleum products for several years. At present it is operating a 5,000-bbl. refinery located at Wood River, Ill. The company expects to continue the operation of the Wood River refinery. With the two plants it will be operating on basis of approximately 10,000 bbls. daily.

The new refinery at Detroit will take care of a large distribution which the company has in that city and section. Gasoline distribution through its own stations in that area at present is said to total 50,000,000 gallons yearly. With the two refineries the company will have a gasoline output largely in excess of its own station requirements which will provide for future expansion and supply a large jobber trade.

Although it has not been announced it is understood that the company will secure its crude supply from the Prairie Oil & Gas Co. The latter company supplies the crude oil requirements of the Wood River plant. Mid-Continent crude at present is being made available by the Prairie company to the Imperial Oil, Ltd. of Canada. The oil is delivered to the Imperial at the International boundary through the pipe lines connections of the Prairie Pipe Line Co., the Illinois Pipe Line Co., and the Buckeye Pipe Line Co. The latter line runs north out of Ohio connecting to the Imperial line at Port Huron, Mich. This line passes within a short distance of the refinery site of the White Star at Detroit.

BEST YEAR IN HISTORY OF REGINA REFINERY

NEW YORK, Dec. 31.—According to reports from Toronto, 1928 has been the best year in the history of the Regina refinery of the Imperial Oil Co. Ltd. All previous plant records were shattered in September of this year when the refinery was worked at capacity every hour during the 30 days of the month, producing 100,000 bbls. of gasoline to take care of the record demand by threshers. Despite this record production for the plant, the reserve supply of 100,000 bbls. of gasoline on hand was completely exhausted by the end of that month, due to the unprecedented demand. Business in outlying sections of the Regina plant's territory had to be met from other refineries of the company during that period.

It is expected that the Regina refinery in 1929 will produce 1,000,000 bbls. of gasoline, this product constituting the chief item turned out at that plant. In addition, approximately 400,000 bbls. of kerosene will be produced and by-products, such as asphaltic oils, fuel oils, etc., will be used to supply the small demand.

Twelve years ago Imperial Oil Co., Ltd., chose Regina as the logical western distributing center for its business, and invested $1,000,000 in a refinery there. The present plant represents an expenditure of close to $3,000,000.

Standard Oil Co. of New Jersey, through ownership of 4,700,000 of the 6,575,582 shares of Imperial Oil Co., Ltd., outstanding, controls the Canadian company.

ENLARGING VINVALE REFINERY

The Rio Grande Oil Co. is enlarging its refinery at Vinvale, in Los Angeles County, California. The present capacity of 4,000 bbls. daily is being doubled and other improvements made. A large increase in storage facilities is part of the improvement program. Several new service stations also are being built.

The Rio Grande company, with the Barnsdall Oil Co., is assured of large crude production in the new Elwood Field. The two companies drilled the discovery well.

A. L. CONFER SUCCUMBS; ONE OF OLDEST REFINERS

A. L. Confer, one of the oldest refiners in the United States and a prominent resident of Oil City, Pa., died at his winter home in Umatilla, Fla., on December 28. Mr. Confer, who was 85 years old, had been for nearly 50 years a refiner of Pennsylvania crude oil and at the time of his death was president of the Empire Oil Works and the Tidioute Refining Co.

With S. Y. Ramage and Fred Fisher of Oil City, he started the Mutual Oil Co., at Reno, after a year or two selling out his interest to Mr. Ramage. Then he started to build the Empire Oil Works at Reno. The business of refining has been expanded to such an extent that the original plant has had to be enlarged several times to meet new demands.

A short time ago the Empire Oil Works took over the control and management of the Tidioute Refining Co.

Mr. Confer was active in the National Petroleum Association, of which he was one of the charter members. He attended most of the meetings of this organization and always took an active part in the discussions. His advice was frequently sought by other members of the organization when problems affecting the industry were met. At one time he was vice president and trustee of the association.

TO START TEXAS-EMPIRE LINE

The A. O. Smith Corp., of Milwaukee, Wis., has been awarded the contract for 636 miles of 12-inch pipe by the Texas-Empire Pipe Line Co. Work on the line which will connect the Chicago area with the Mid-Continent fields will start immediately.

The line will supply crude oil for the refinery of The Texas Company at Lockport, Ill., and a new refinery which the Empire Oil & Refining Co. will build near Chicago. The latter company has taken options on sites in the Hammond and East Chicago section and it is expected that a definite site for the plant will be selected within the next month.

BUERGER VICE PRESIDENT GULF REFINING COMPANY

HOUSTON, Tex., Dec. 29.—A widespread change in the personnel of the executives of the Gulf Refining Co., including the selection of George B. Buerger, general manager at Pittsburgh, Pa., to succeed George Tabor, retiring vice president, was made known at Houston offices of the company.

John W. Tryon of Port Arthur, who has been manager of the refining department there, has been promoted to general manager to succeed Mr. Buerger at Pittsburgh, and George L. Pritchard of Pittsburgh was appointed assistant general manager.

Other changes include the following: William Slater of Port Arthur, Tex., now assistant general superintendent, becomes general superintendent of refineries in Texas. Herbert Henderson, recently transferred to Pittsburgh, is appointed manager of construction for refineries. John G. Glascow, Port Arthur, becomes chief engineer. Luther Jones, superintendent of the refinery at Philadelphia, Pa., becomes manager, and James V. Baney is promoted to succeed him as superintendent.

Harris V. Sanderson, assistant superintendent of the Bayonne, N. J., refinery, will become manager. Herschel G. Smith, Port Arthur, will be manager of refinery technology, and O. G. Wilson, Port Arthur, will be chief chemist. James Kennedy, New York, manager of the marine department, will become general manager of this department, with George N. Bliss, Port Arthur, to become assistant manager. Willard F. Jones, New York, will be superintendent of the marine department, and Charles H. Ebert, Pittsburgh, will be marine traffic manager.

STATION OWNERS FORM CHICAGO ORGANIZATION

CHICAGO, Dec. 29.—A number of owners of independent service stations have organized the Chicago Service Station Owners Protective Association with the following officers. President, R. W. Riley; vice president, F. M. Riester; secretary, F. L. Bosworth; treasurer, H. T. Biddle; directors, the officers and A. E. Small.

The objects of the organization are as the name indicates, membership identification through station displays and other means of advertising, the protection of its members from unjust and unlawful exactions, the observance of fair posted prices and in general to do all possible for the benefit of the legitimate service station owners.

One of the objects is to protect the members against the racketeers who have threatened some of the oil men with trouble if they did not pay tribute to an alleged organization of station owners. The officers are planning a campaign for additional membership on the basis of a fair deal for all concerned.

T. S. K. HAWXHURST DIES

NEW YORK, Dec. 29.—T. S. K. Hawxhurst, superintendent of the Bayonne refinery of the Gulf Refining Co., died December 21 at his home in Bayonne, aged 75, after a short illness. Mr. Hawxhurst had been connected with the company for the past 20 years, having served in various capacities before becoming superintendent of the refinery.

NEW BRUNSWICK TAX

CHATHAM, Ontario, Dec. 29.—The province of New Brunswick has increased its gasoline tax to 5 cents an imperial gallon, at the same time decreasing the motor license fee by 15 per cent.

Natural Gasoline Manufacture

DEVELOPMENTS IN PRODUCTION OF BY-PRODUCTS FROM GASOLINE

By H. J. Hunter
Columbian Gasoline Corp.

The manufacture of by-products from gasoline plants depends upon several factors among which are:

1. The market conditions of the by-product produced, both present and future. Future supply and demand must be considered before a large investment in the process used can be justified.

2. The efficiency of the gasoline plant in extracting natural gasoline, in terms of a good grade of natural gasoline.

3. The chemical properties of both the natural gas from which the gasoline is produced and the gasoline itself.

A further brief discussion of these last two factors might not be amiss at this point. By a good grade gasoline is meant a gasoline that conforms with the present specifications for natural gasoline as regards freedom of sulphuric acid, corrosion, etc., and contains a controlled percentage of butane and propane.

Gasoline produced at plants, under varying conditions, from different gases, naturally are not always of the same composition. Some gases contain more of the lighter low boiling point hydrocarbons than others. Therefore, in a case of this kind it is often desirable to fractionate the gasoline to a point where a stable low vapor tension, high recovery product (natural gasoline) is obtained.

This fractionation produces a more or less large quantity of so-called noncondensable gases or vapors that are often of little value to the producer of natural gasoline unless he has a market for a product of this nature.

The table below will give an idea of some of the properties of the various gases that goes to make up the gas from which natural gasoline is obtained. The percentages of each constituent vary widely. A lean natural gas contains a very high percentage of methane and ethane often 90 per cent and some times more. A richer or wet gas contains smaller percentages of methane and higher percentages of propane, butane, pentane and heavier hydrocarbons.

It can be readily understood that the lower the percentage of propane the more desirable is the gasoline from a refinery standpoint for use in blending for motor fuel. The above discussion is only meant as an effort to explain the undesirable hydrocarbons in the natural gasoline and that the natural gasoline can not be used as a raw material.

Name—	Gross Heating Value per cu. ft.	Be. Gravity	Specific Gravity	Pressure Necessary to Liquefy @ 60F	Boiling Point
Methane	1065		.55*		—265 F
Ethane	1861		1.03*	457 lbs. sq. in.	—135
Propane	2654	130@32F	1.52*	105	— 49
Butane	3447	103	2.00*	33	34
Pentane	4250	94	2.48*	6.5	97
Hexane	5012	81	2.92*	1.8	156
Heptane	5792	73	.688**	0.5	208
Octane	6580	66	.716**	0.1	259
Monane	7360	61	.733**		302
Decane	8150	57	.750**		343
Indecane		52	.767		383
Quodecane		49	.780		419

—Air = 1
•— Wates = 1

Commercial Development

Some of the larger companies are at present producing fuel gas for uses where natural gas is not available by fractionating the propane from their product and shipping it in steel drums to the customer. One company has shipped a large quantity of "Lighter Gasoline" (principally butane and some pentane) for use in cigaret lighters.

Another company is purchasing the propane and other light waste gases from gasoline plants and by a process of treatment produces several synthetic chemicals. Research work is being conducted at present to use these light hydrocarbons to manufacture perfumes.

A product called "Petrolic Ether" is being produced at some natural gasoline plants. This is done, however, by cutting deeper into the Pentane and heavier hydrocarbons and, therefore, is not altogether a by-product. The same is true of the companies that are using their natural gasoline as a base for aviation and high gravity motor fuel.

USE SEVERAL METHODS IN TREATING NATURAL GASOLINE CONTINUOUSLY

By H. S. Peters*
Columbian Gasoline Corp.

Gasoline which passes the "doctor test" is pronounced sweet. Practically all gasoline made by the compression and by the oil absorption processes fails to pass the test. Gasoline which is "sour" contains sulphur compounds which react with the doctor solution, giving what is termed a "positive test." The two processes of sweetening gasoline in general use are the "plumbite" and "hypochlorite" process.

The hypochlorite method consists in bringing the gasoline and the hypochlorite solution into contact, and thereby effecting oxidation of sulphur compounds present in the gasoline. Bleaching powder (chloride of lime) or sodium hypochlorite (solution of chlorine in diluted caustic soda) are used to effect the reaction.

Hypochlorite process for treating natural gasoline consists in passing the sour gasoline and a solution of bleaching powder through knot hole mixers and thence to a tank where the gasoline separates from the solution and then passes to another tank filled with the baffling. In this tank the gasoline is washed with water. After separating from the gasoline in the former tank, the treating solution is returned to the solution circulating pump and used over again until spent. A tower for aerating the treating solution is used by Peaks and Younge, at the Midwest plant Wyoming in order to secure longer life for the treating solution and thereby reduce to a minimum the quantity of hypochlorite required to treat a given amount of gasoline.

The gasoline is treated under pressure in an enclosed system which practically eliminates losses incident to treating.

Various modifications of the hypochlorite process have been used. One modification of the process consists in using a solution of slacked lime and chlorine and preparing the hypochlorite prior to treatment by introducing the chlorine into the suction of the solution recirculating pump. After a definite amount of chlorine has been consumed as determined by loss in weight of the chlorine container, the solution is ready for use in treatment of gasoline. Gasoline and the treating solution are pumped together through a pipe containing several orifice plates in series.

The agitation caused by passage of the mixture of gasoline and treating solution through the orifices affords contact between the ingredients of the mixture, thereby "sweetening" the gasoline.

Another modification consists of sodium hydroxide and chlorine used in a manner similar to that described above. In another modification the chlorine is introduced in measured amounts by means of a flowmeter in to the solution of sodium hydroxide. Gasoline is introduced at the same time into the bottom

(Continued on Page 139)

*Plant foremen's meeting.

NEW TEXAS PLANT

The Texas Company is completing a new absorption plant in the Santa Fe Springs Field of California, the new installation having become necessary because of deep sand exploitation in that area. The company's new plant has a capacity of 40,000 gallons and is capable of handling 12,000,000 feet of wet gas daily. This new plant is located just east of the company's oil plant No. 9 and is quite similar to The Texas Company's plant No. 5 completed at Long Beach a few months ago.

BOURQUE RECEIVES CAR AS CHRISTMAS PRESENT

A. V. Bourque, who recently took up his duties as secretary of the Western Petroleum Refiners Association, was among those who were agreeably surprised on Christmas morning.

A new sport model Ford coupe was delivered at his Tulsa home, the gift of his friends among the natural gasoline manufacturers. Mr. Bourque on December 15 resigned as secretary of the Natural Gasoline Association of America to accept his present position after having served the gasoline association since 1921, when it was organized. The gift was an expression of appreciation for his work in behalf of the natural gasoline industry, and was presented by the board of directors.

As a member of the staff of the Western Petroleum Refiners Association, Mr. Bourque will continue to have his headquarters in Tulsa.

SIGNAL HILL COMPANY STARTS GASOLINE PLANT

On January 1, the Signal Hill Gasoline Co. completed its No. 9 natural gasoline plant which is located in the Signal Hill Field of California. The plant will have an initial capacity of 30,000 gallons daily.

With the completion of this plant the Signal Hill company has six gasoline plants in California with a total rated capacity of 113,000 gallons daily. In addition, the company operates the four plants belonging to the Pan American Petroleum Co. The Signal company is a subsidiary of the Richfield Oil Co., which last summer purchased the Pan American Petroleum Co.

After the purchase the operation of the natural gasoline plants of the two companies was consolidated. The Pan American also owns a half interest in a plant located in the Long Beach Field. The other half interest belongs to the Pacific Western Oil Co., formerly known as the Petroleum Securities Co. The Pacific Western operates the plant.

As a result of changes in its operations made necessary by the consolidation of the Pan American and Signal Hill operations the latter company had abandoned three plants in California. These plants and their daily capacity follows: Athens, 8,000 gallons; Maricopa, 3,000, and Huntington Beach, 6,000.

List of Plants

Following is a list of the operating plants of the Signal Hill and Pan American companies:

Signal Hill Gasoline Co.

Field location—	Daily cap.
Signal Hill	18,000
Signal Hill	15,000
Maricopa	3,000
Huntington Beach	15,000
Seal Beach	30,000
Maricopa	2,000
Signal Hill	30,000
Pan American Petroleum Co.	
Elk Hills	6,000
Torrance	2,000
Signal Hill	25,000
Ventura	5,000

H. R. Linhoff is general superintendent of natural gasoline plants for the Pan American and Signal Hill companies. J. T. Armitage is sales manager.

A Practical Suggestion

EMERGENCY BODY TAP

Natural gasoline and booster plant operators have trouble with spark plugs burning on all internal combustion engines, even in localities where the sulphur content of the fuel gas is practically zero. In some cases the inside thread of the plug will become corroded and fused to the cast iron cylinder body. When this occurs and the spark plug is removed from the cylinder the threads on both the plug and the cylinder body are generally torn in such way that a new plug can only be screwed in with some difficulty. Eventually the cast iron body will be stripped.

It is not always convenient for the operator to acquire a tap that will retap these plug bodies, especially for plugs that have straight threads that are not tapered and shoulder up to the gasket.

However, if he will send a spark plug, preferably a new one with good threads, to the machine shop and have it fluted in six or eight places and then case hardened he will have a tap that will serve for some time and cost very little. The core may be removed from the plug and a handle welded on, or the tap may be used with the regular spark plug socket wrench.

Practical suggestions by those connected with the construction and operation of natural gasoline plants are invited. Payment will be made as soon as suggestions are accepted. Address all communications to the Natural Gasoline Department, The Oil and Gas Journal, Tulsa.

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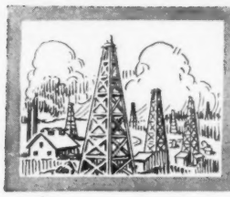


REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINE AND NAPHTHA

OKLAHOMA (Group 3)—	Jan. 1		Dec. 26		Dec. 18	
50-52 450 endpoint	.07½	.07¾	.07¾	.08	.08	
56-58 450 endpoint	.07½	.07¾	.07¾	.08	.08	
58-60 450 endpoint	.07½	.07¾	.07¾	.08	.08	.08¼
*58-60 437 endpoint (U. S. Motor)	.0833		.087		.0871	
*60-62 400 endpoint	†.08¼	.08½	.0886		.0863	
*60-62 400 endpoint	†.085		.095		.0900	
*64-66 375 endpoint	†.09¼	.09½	.1025		.1045	
68-70 360 endpoint	.09¼	.09¾	.09½	.10	.09¾	.10
64-66 437 endpoint (blend)	.07¾	.08	.08	.08½	.08¼	.08½
NORTH TEXAS—						
56-58 450 endpoint	.07¼	.07½	.07½	.08	.07¾	.08
58-60 450 endpoint	.07¼	.07½	.07¾	.08	.08	.08¼
58-60 437 endpoint (U. S. Motor)	.07½	.07¾	.08	.08¼	.08	.08¼
60-62 400 endpoint	.08	.08¼	.08½	.08¾	.08¾	.09
64-66 390 endpoint	.08¼	.08¾	.08¾	.09	.08¾	.09¼
64-66 375 endpoint	.08½	.08¾	.08¾	.09¼	.09	.09½
68-70 360 endpoint	.09	.09¼	.09¼	.09½	.09½	.09¾
64-66 437 endpoint (blend)	.07½	.07¾	.08¼	.08½	.08½	.08¾
NORTH LOUISIANA—						
58-60 437 endpoint (U. S. Motor)	.08¼	.08½	.08¾		.08¾	.09
ARKANSAS—						
58-60 437 endpoint (U. S. Motor)	.08¼	.08½	.08½	.08¾	.08½	.08¾
PENNSYLVANIA—						
52-54 Naphtha	.09¼	.09½	.09¼	.09½	.10	.10¼
54-56 Naphtha	.09¾	.10	.09¾	.10	.10¼	.10½
58-60 Gasoline	.10	.10¼	.10¼	.10½	.10¼	.10½
60 Gasoline	.10½	.10¾	.11½	.11¾	.11½	.11¾
62 Gasoline	.10¾	.11	.12½	.12¾	.12½	.12¾
64 Gasoline	.12	.12¼	.12¼	.12½	.12½	.12¾
CALIFORNIA—						
58-60 437 endpoint (U. S. Motor) domestic	.10	.11	.10	.11	.10	.11
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.07¾		.08		.08	
56-58 450 endpoint	.07¾		.08		.08	
58-60 437 endpoint (U. S. Motor)	.07¾	.08	.08	.08½	.08⅛	.08½
60-62 400 endpoint	.08¼	.08½	.08½	.09	.09	.09¼
64-66 375 endpoint	.09¼	.09½	.09	.09¼	.09½	.10
68-70 360 endpoint	.09¾	.10	.10		.10	.10¼
64-66 437 endpoint (blend)	.08⅛	.08¼	.08¼	.08½	.08¼	.08¾

*Weighted average prices December 31, 24 and 17, as reported by representative refiners. Sales to jobbers only. †No sales reported. Prices given are general market.

NATURAL GASOLINE

OKLAHOMA (Group 3)—	Jan. 1		Dec. 26		Dec. 18	
Grade A, 72-79.9, 375 e.p., rec. 90%	.08		.08⅜		.08¾	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06½	.06¾	.07⅜	.07½	.07¾	
Grade B, 76-83.9, 375 e.p., rec. 85%	.06¼	.06½	.06¾		.07¼	
Grade BB, 84-92, 375 e.p., rec. 85%	.06	.06¼	.06⅜	.06½	.06½	
Grade C, 80-90, 375 e.p., rec. 78%	.06		.06⅜	.06½	.06½	
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.08		.08⅜		.08¾	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06½		.07⅜		.07¾	
Grade B, 76-83.9, 375 e.p., rec. 85%	.06¼		.06¾	.07	.07¼	
Grade BB, 84-92, 375 e.p., rec. 85%	.06	.06¼	.06⅜	.06½	.06½	
Grade C, 80-90, 375 e.p., rec. 78%	.06		.06⅜		.06½	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.06¾	.07	.07¾	.08	.07¾	.08
Grade BB, 84-92, 375 e.p., rec. 85%	.06½	.06¾	.06⅝	.06¾	.07	
Grade C, 80-92, 375 e.p., rec. 78%	.06½		.06¾	.07	.06¾	.07
CALIFORNIA—						
75-78, 375-390 endpoint	.07¼	.07¾	.07¼	.07¾	.06¾	.07¼
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.08		.08⅜		.08¾	.09
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06½		.07⅜	.07½	.07½	
Grade B, 76-83.9, 375 e.p., rec. 85%	.06¼		.06¾		.07¼	
Grade BB, 84-92, 375 e.p., rec. 85%	.06		.06⅜	.06½	.06¾	
Grade C, 80-90, 375 e.p., rec. 78%	.06		.06⅜	.06½	.06½	

BURNING OIL

OKLAHOMA (Group 3)—	Jan. 1		Dec. 26		Dec. 18	
41-43 water white Kerosene	.05⅜	.05⅝	.05½	.05¾	.05½	.05¾
42-44 water white Kerosene	.05⅞	.06	.05⅞	.06⅛	.05⅞	.06⅛
NORTH LOUISIANA—						
41-43 water white Kerosene	.06¼		.06½		.06¼	.06½
NORTH TEXAS—						
41-43 water white Kerosene	.05¼	.05½	.05¼	.05½	.05¼	.05½
40-42 water white Kerosene	.05¼		.05¼		.05¼	
ARKANSAS—						
41-43 water white Kerosene	.06¼	.06½	.06¼	.06½	.06¼	
PENNSYLVANIA—						
43 Kerosene prime white	.07	.07⅛	.07	.07¼	.07	.07¼
45 Kerosene water white	.07⅛	.07⅜	.07⅜	.07½	.07⅜	.07½
46 Kerosene water white	.07½	.07¾	.07½	.07¾	.07½	.07¾
47 Kerosene water white	.07¾	.08	.07¾	.08	.07¾	.08
300 Mineral Seal	.07⅛	.07⅜	.07¼	.07½	.07¼	.07½
CALIFORNIA—						
38-40 water white Kero. (high-burning test)	.06½	.07	.06½	.07	.06½	.07
Engine distillate, 43-44, 445 endpoint	.07½	.08	.07½	.08	.07½	.08
Engine distillate, 42-44, 480 endpoint	.07	.07½	.07	.07½	.07	.07½
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white Kerosene	.05½	.05⅝	.05½	.05⅝	.05½	.05¾
42-44 water white Kerosene	.05⅞	.06	.05⅞	.06	.05⅞	.06⅛

FUEL OILS

OKLAHOMA (Group 3)—	Jan. 1		Dec. 26		Dec. 18	
Below 18 Fuel Oil, per bbl.	.50	.55	.50	.55	.50	.55
18-22 Fuel Oil, per bbl.	.55	.57½	.55	.57½	.55	.57½
22-26 Fuel Oil, per bbl.	.60	.62½	.60	.62½	.60	.62½
24-26 Fuel Oil, per bbl.	.62½	.65	.62½	.65	.62½	.65
26-30 Fuel Oil, per bbl.	.65	.70	.65	.70	.65	.70
28-30 Fuel Oil, per bbl. (industrial)	.80	.82½	.80	.82½	.80	.82½
28-30 Fuel Oil, per bbl. (zero cold test)	.87½	.92½	.85	.90	.85	.87½
32-36 Gas Oil (dark)	.02⅝	.02¾	.02½	.02⅝	.02½	.02⅝
32-36 Gas Oil (straw color)	.02¾	.02⅞	.02⅝	.02¾	.02⅝	.02¾
36-38 Distillate	.03⅛	.03¼	.03⅛	.03¼	.03⅛	.03¼
38-40 Straw Distillate	.03½	.03¾	.03⅜	.03⅝	.03⅜	.03⅝
NORTH TEXAS—						
Below 20 Fuel Oil	.50	.52½	.50	.52½	.50	.62½
24-26 Fuel Oil, per bbl.	.52½	.55	.52½	.55	.52½	.55
32-36 Gas Oil (straw)	.02½	.02⅝	.02⅜	.02½	.02⅜	.02½
38-40 Straw Distillate	.03⅜	.03⅝	.03¼	.03⅜	.03¼	.03⅜
NORTH LOUISIANA—						
18-20 Fuel Oil, per bbl.	.75		.75		.75	
32-36 Gas Oil	.03		.03	.03¼	.03	.03¼
ARKANSAS—						
33-36 Distillate	.03¼	.03½	.03¼	.03½	.03¼	.03½
32-36 Gas Oil (straw)	.03		.03¼		.03	
16-22 Refinery Fuel Oil, per bbl.	.75		.75		.75	
GULF COAST (South Texas)—						
Gas Oil	.04¼	.04½	.04¼	.04½	.04¼	.04½
Bunker C Fuel, per bbl.	.80	.90	.80	.90	.80	.90
PENNSYLVANIA—						
30-34 Fuel Oil	.04⅜	.04⅝	.04⅜	.04½	.04¼	.04⅜
36-40 Fuel Oil	.04⅜	.04⅞	.04⅜	.04⅞	.04½	.04¾
CALIFORNIA—						
33-36 Distillate	.03¾	.04	.03¾	.04	.03¾	.04
27-32 Distillate	.03	.03½	.03	.03½	.03	.03½
*15-20 Fuel Oil, Bunker (at tide water)	.85	1.00	.85	1.00	.85	1.00
15-20 Fuel Oil (cargo lots), per bbl.	.75	.85	.75	.85	.75	.85
27 plus Diesel, per bbl.	1.15	1.19	1.15	1.19	1.15	1.19
CHICAGO DISTRICT (Based on Group 3)—						
22-26 Fuel Oil, Group 3, bbl.	.60	.65	.60	.65	.60	.62½
18-22 (Group 3), per bbl.	.52½	.55	.52½	.55	.52½	.57½
16-20 Smackover, per bbl.	.90		.90		.87½	.90
28-30 Fuel Oil (zero)	.92½	1.00	.90	1.00	.87½	.92½
32-36 Gas Oil, zero	.02⅞	.03⅛	.03	.03¼	.03	.03¼
32-36 Gas Oil (industrial)	.02½		.02½		.02¾	.03
36-38 Distillate	.03¼	.03½	.03⅜	.03½	.03¼	.03⅜
38-40 Straw Distillate	.03⅝	.03¾	.03⅝	.03¾	.03½	

*Bunker.

LUBRICATING OIL AND WAX

OKLAHOMA (Group 3)—	Jan. 1		Dec. 26		Dec. 18	
100 vis., 2 color, 20-25 cold test	.06	.06¼	.06	.06¼	.06	.06¼
100 vis., 3 color, 20-25 cold test	.06		.06		.06	
150 vis., 3 color, 20-25 cold test	.08	.08¼	.08	.08¼	.08	.08¼
150 vis., 4 color, 20-25 cold test	.08		.08		.08	
180 vis., 3 color, 23-28 cold test	.09¼	.09½	.09¼	.09½	.09¼	.09½
180 vis., 4 color, 23-28 cold test	.09	.09¼	.09	.09¼	.09	.09¼
180 vis., 5 color, 23-28 cold test	.09	.09¼	.09	.09¼	.09	.09¼
200 vis., 3 color, 23-28 cold test	.09¼	.09½	.09¼	.09½	.09	.09¼
200 vis., 4 color, 23-28 cold test	.09⅛	.09¼	.09⅛	.09¼	.09⅛	.09¼
200 vis., 5 color, 23-28 cold test	.09	.09¼	.09	.09¼	.09	.09¼
240 vis., 3 color, 25-30 cold test	.13½	.13¾	.13½	.13¾	.13½	.13¾
240 vis., 4 color, 25-30 cold test	.13	.13¼	.13	.13¼	.13	.13¼
240 vis., 5 color, 25-30 cold test	.12	.12¼	.12	.12¼	.12	.12¼
280 vis., 3 color, 25-30 cold test	.15¼	.15½	.15¼	.15½	.15¼	.15½
280 vis., 4 color, 25-30 cold test	.14¾	.15	.14¾	.15	.14¾	.15
280 vis., 5 color, 25-30 cold test	.13¾	.14	.13¾	.14	.13¾	.14
Cylinder Stocks:						
600, steam refined, light green	.08	.10	.08	.10	.08	.09
600, steam refined, dark green	.08	.09	.08	.09	.06	.06½
190-200 vis. @ 210 Bright Stock	.30	.32	.30	.32	.29	.30
150-160 vis. @ 210 Bright Stock	.28	.29	.28	.29	.25	.27
Waxes:						
124-126 White Crude Scale Wax	.04¾	.05	.04¾	.05	.05	
PENNSYLVANIA—						
34 Neutral	.07½	.07¾	.07½	.07¾	.07½	.07¾
34 Sundebloom	.08¼	.08½	.08¼	.08½	.08¼	.08½
36 Miners' Neutral	.07⅞	.07½	.07⅞	.07½	.07⅞	.07½
150, 3 color	.21½	.22	.21	.21½	.21	.21½
180, 3 color	.25½	.26	.24½	.25	.24½	.25
200, 3 color	.28	.28½	.27½	.28	.27½	.28
220, 3 color	.30½	.31	.30½	.31	.30½	.31
600, steam refined	.23½	.24	.22½	.23	.20	.20¼
635, steam refined	.27½	.28	.25	.25½	.23	.24
650, steam refined	.29½	.30	.27½	.28	.24	.25
600, Pennsylvania flash	.31½	.32	.29½	.30	.26½	.27½
*550, E filtered	.16	.16½	.16	.16½	.16	.16½
*600, E filtered	.17½	.18	.17½	.18	.17½	.18
600, E filtered	.26½	.27	.23½	.24	.22	.23
600, D filtered	.28½	.29	.28½	.29	.26	.27
550, E filtered	.15½	.16	.15½	.16	.15½	.16
550, D filtered	.21½	.22	.21½	.22	.21½	.22
Pennsylvania Bright Stock	.39	.40	.36	.37	.36	.37
†122-124 White Crude Scale Wax	.05¼	.05⅜	.05¼	.05⅜	.05¼	.05⅜
†124-126 White Crude Scale Wax	.05⅜	.05½	.05⅜	.05½	.05⅜	.05½
GULF COAST (South Texas)—						
No. 2 color, 100 vis., pale oil	.06½	.07	.06½	.07	.06½	.07
No. 3 color, 200 vis., pale oil	.08½	.09	.08½	.09	.08½	.09
No. 3 color, 300 vis., pale oil	.11	.11½	.11	.11½	.11	.11½
No. 3½ color, 500 vis., pale oil	.12½	.13	.12½	.13	.12½	.13
No. 4 color, 750 vis., pale oil	.15	.15½	.15	.15½	.15	.15½
No. 5 to 6 color, 200 vis., red oil	.08¼	.08½	.08¼	.08½	.08¼	.08½
No. 5 to 6 color, 300 vis., red oil	.09¼	.09½	.09¼	.09½	.09¼	.09½
No. 5 to 6 color, 500 vis., red oil	.10½	.11½	.10½	.11½	.10½	.11½
No. 5 to 6 color, 750 vis., red oil	.13¼	.14	.13¼	.14	.13¼	.14
No. 2½ color, 200 vis., pale filtered	.11¾	.12¼	.11¾	.12¼	.11¾	.12¼
No. 2½ color, 300 vis., pale filtered	.13½		.13½		.13½	
No. 2½ color, 500 vis., pale filtered	.15½	.16	.15½	.16	.15½	.16
No. 2½-3 color, 750 vis., pale filtered	.18	.20	.18	.20	.18	.20
CALIFORNIA—						
130 vis., 2½-3 color	.10¼	.10½	.10¼	.11	.10¼	.11
200 vis., 2½-3 color	.11½	.11¾	.11½	.12	.11½	.12
300 vis., 3-3½ color	.13	.13¼	.13	.13½	.13	.13½
350 vis., 3½-4 color	.13½	.13¾	.13½	.14	.13½	.14

*At Warren, Pa. †At New York.

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

400 vis., 3½-4 color	.15	.15½	.15	.16	.15	.16
Red Neutral:						
200 vis., 4½-5 color	.11¼	.11½	.11½	.11⅝	.11½	.11⅝
300 vis., 5-6 color	.11¾	.12	.11¾	.12½	.11¾	.12½
400 vis., 5-6 color	.13½	.14	.13½	.14½	.13½	.14½
500 vis., 4½-5 color	.15¼	.15½	.15	.15½	.15	.15½
500 vis., 5-6½ color	.15	.15¼	.15¼	.15¾	.15¼	.15¾
600 vis., 6½ plus color	.15½	.15¾	.15½	.16	.15½	.16

Note: Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	Jan. 1	Dec. 26	Dec. 18
Gasoline, U. S. Motor, 58-60, 437	.10½	.11	.11
Kerosene, water white, 41-43	.09	.09	.09
*Fuel Oil, Bunker "C," 14-16, per bbl.	1.05	1.05	1.05
†Fuel Oil, Diesel, 28-30, per bbl.	2.00	2.00	2.00
Gas Oil, 32-36 gravity	.05¼	.05¼	.05¼
25 pale Paraffin Oil	.11¾	.11¾	.11¾
28 pale Paraffin Oil	.07½	.07½	.07½
285 red Paraffin Oil	.11½	.11½	.11½
250 red Paraffin Oil	.11	.11	.11
225 red Paraffin Oil	.09½	.09½	.09½
300 red Paraffin Oil	.09	.09	.09
Refined Wax:			
120-122 a.m.p., per lb.	.05⅝	.05⅝	.05½
125-127 a.m.p., per lb.	.05⅞	.05⅞	.05⅞
130-132 a.m.p., per lb.	.06¾	.06¾	.06¾
133-135 a.m.p., per lb.	.07⅜	.07⅜	.07⅜
135-137 a.m.p., per lb.	.07¾	.07¾	.07¾
Petrolatum, in bbls., carload lots, per lb.:			
Dark green	.02	.02	.02
Amber	.03½	.03½	.03½
Extra amber	.03¾	.03¾	.03¾
Cream	.06½	.06½	.06½
Lily white	.07½	.07½	.07½
Snow white	.08½	.08½	.08½

*Lighterage, 5.0c a barrel extra. †Lighterage, 6.5c a barrel extra.

NEW YORK (BAYONNE) EXPORT PRICES

	Jan. 1	Dec. 26	Dec. 18
Gasoline, U. S. Motor, 58-60 437, in cases	.2640	.2640	.2640
Kerosene, standard white, in cases	.1765	.1765	.1765
Kerosene, water white, in cases	.1890	.1890	.1890
600, steam refined cylinder stocks, in bbls.	.30	.27	.27
635, steam refined	.31	.28	.28
650, steam refined	.34	.32	.32
600, Pennsylvania flash	.38	.34	.34
630, Pennsylvania flash	.42	.40	.40
600, Warren E	.35	.29	.29
600, Oil City E	.34	.28	.28
Light 140-150 Bright Stocks	.46	.44	.44
Dark 140-150 Bright Stocks	.44	.42	.42

LOS ANGELES EXPORT PRICES

	Jan. 1		Dec. 26		Dec. 18	
Kerosene, water white	.05½	.06	.05½	.06	.05½	.06
U. S. Motor Gasoline, 53-55, 437 e.p.	.08	.08¼	.08	.08¼	.08	.08¼

CALIFORNIA CRUDE OIL PRICES

Standard Oil Co.-Union Oil Co. (Effective August 15, 1928)*

Gravity—	Richfield Torrance Olinda-Brea Alamitos Hts. Signal Hill Seal Beach Huntington Beach Athens Dominguez Inglewood	Whittier La Habra Coyote Hills	†Kern River Newhall-McKittrick Midway-Sunset Elk Hills Lost Hills Reinridge Buena Vista Hills Montebello	Santa Fe Springs	Coalinga	Wheeler Ridge	Orcutt	Ventura
	1	2	3	4	5	7	8	9
14 to 14.9	.85	.85	.75	.85	.75	.75	.85	.85
15 to 15.9	.85	.85	.75	.85	.75	.75	.85	.85
16 to 16.9	.85	.85	.75	.85	.75	.75	.85	.85
17 to 17.9	.85	.85	.75	.85	.75	.75	.85	.85
18 to 18.9	.85	.85	.75	.85	.75	.75	.85	.85
19 to 19.9	.85	.85	.75	.85	.75	.75	.85	.85
20 to 20.9	.85	.85	.77	.86	.77	.77	.85	.85
21 to 21.9	.89	.88	.79	.89	.79	.79	.86	.86
22 to 22.9	.93	.91	.82	.92	.82	.82	.87	.87
23 to 23.9	.97	.94	.86	.95	.85	.85	.90	.90
24 to 24.9	1.01	.97	.90	.98	.88	.88	.93	.94
25 to 25.9	1.05	1.00	.95	1.01	.91	.91	.95	.98
26 to 26.9	1.09	1.04	1.00	1.04	.94	.94	.97	1.02
27 to 27.9	1.13	1.08	1.05	1.07	.98	.97	....	1.06
28 to 28.9	1.17	1.12	1.10	1.10	1.02	....	....	1.10
29 to 29.9	1.21	1.16	1.13	1.15	1.06	....	....	1.14
30 to 30.9	1.25	1.20	1.22	1.16	1.20	1.10	....	1.18
31 to 31.9	1.30	....	1.28	....	1.25	1.14	....	1.23
32 to 32.9	1.35	....	1.34	....	1.30	1.18	....	1.28
33 to 33.9	1.41	....	1.40	....	1.35	1.22	....	....
34 to 34.9	1.47	....	1.46	....	1.40	1.26	....	....
35 to 35.9	1.53	....	....	....	1.45	1.30	....	....
36 to 36.9	1.59	....	....	....	1.50	....	....	....
37 to 37.9	1.65	....	....	....	1.55	....	....	....
38 to 38.9	1.71	....	....	....	1.60	....	....	....
39 to 39.9	1.77	....	....	....	1.65	....	....	....
40 to 40.9	1.83	....	....	....	....	....	....	....
41 to 41.9	1.89	....	....	....	....	....	....	....
42 to 42.9	1.95	....	....	....	....	....	....	....

*Column 1—Signal Hill, Seal Beach, Huntington Beach and Alamitos Heights crude, 14 to 32.9 gravity, inclusive; Richfield, Olinda-Brea and Fullerton, 14 to 30.9 gravity; Torrance and Inglewood 14 to 28.9 gravity. Dominguez and Athens-Rosecrans, 24 to 42.9 gravity.

Column 2—Whittier crude, 14 to 22.9 gravity; Coyote Hills, 14 to 30.9 gravity.

Column 3—Kern River, Newhall and McKittrick, 14 to 19.9 gravity; Midway-Sunset, Buena Vista and Elk Hills, 14 to 33.9 gravity; Lost Hills, 14 to 34.9 gravity.

Columns 8 and 9 posted by Union Oil Co. only.

†On October 2 Standard Oil Co. of California discontinued contracting for purchase of Kern River crude and on October 20 established following prices on grades below 14 gravity —11 to 11.9 degrees at 45 cents, 12 to 13 degrees at 50 cents.

On December 1 the Union Oil Co. adopted the above schedule of the Standard on Kern River crude and in addition posted Midway-Sunset, Elk Hills, Buena Vista, Lost Hills and Coalinga crude as follows: 11-11.9 gravity, 45 cents; 12 to 12.9 gravity, 55 cents; and 13 to 13.9 gravity at 65 cents. All grades of Elwood crude were cut 7 cents.

CRUDE OIL GRAVITY TABLE

Gravity—	1 Okla., Kans., N. C. Tex.	2 No. La. and Arkansas	3 Smackover, Ark.	4 Stephens, Ark.	5 Gray County (Texas Panhandle)	6 Salt Creek, Wyo.	7 Grade B & Light Crude (G. Coast)	8 Somerset (South Central Texas)
24 and above	....	....	.90	....	....	....	....	....
Below 24	....	....	.75	....	....	....	....	....
Below 25	.60	....	....	....	....	....	1.15	....
25 to 25.9	.67	....	....	....	....	....	....	....
Below 26	....	....	....	....	....	....	....	....
26 to 26.9	.74	....	....	....	....	....	1.19	....
27 to 27.9	.81	....	....	....	....	....	1.21	....
Below 28	....	.81	....	.75	.68	....	....	....
28 to 28.9	.88	.88	....	.77	.68	....	1.23	....
29 to 29.9	.95	.95	....	.79	.73	.95	1.25	....
30 to 30.9	1.02	1.02	....	.81	.82	1.02	1.27	....
31 to 31.9	1.09	1.09	....	.83	.89	1.09	1.29	....
32 to 32.9	1.16	1.16	....	.85	.96	1.16	1.31	1.05
33 to 33.9	1.21	1.21	....	....	1.01	1.21	1.33	1.07
34 to 34.9	1.26	1.26	....	....	1.06	1.26	1.35	1.09
35 to 35.9	1.31	1.31	....	....	1.11	1.31	1.37	1.11
36 to 36.9	1.36	1.36	....	....	1.16	1.36	....	1.13
37 to 37.9	1.41	1.41	....	....	1.21	1.41	....	1.15
38 to 38.9	1.46	1.46	....	....	1.26	....	....	1.17
39 to 39.9	1.51	1.51	....	....	1.31	....	....	....
40 to 40.9	1.56	1.56	....	....	1.36	....	....	....
41 to 41.9	1.61	1.61	....	....	1.41	....	....	....
42 to 42.9	1.66	1.66	....	....	1.46	....	....	....
43 to 43.9	1.71	1.71	....	....	1.51	....	....	....
44 and above	1.76	1.76	....	....	1.56	....	....	....

Column 1—Magnolia Petroleum Co. posted schedule August 2, 1928, making price below 25 gravity 60 cents per barrel, 25-25.9 gravity 67 cents, 26-26.9 gravity 74 cents, and 27-29.9 gravity 75 cents, 30-30.9, 90 cents, and 31-31.9, $1.05, with balance of the price schedule as shown.

Oklahoma—Prairie Oil & Gas Co., Sinclair Oil & Gas Co., Gypsy Oil Co., Carter Oil Co., The Texas Company, July 26.

North Central Texas—[Including Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs (Southwest Texas, Iatan and Panola (Iatan posted at flat price of 93 cents by Magnolia on January 14, 1928).] Currie, Nocona and Moran. Prairie, Sinclair and Gulf, The Texas Company, Humble Oil & Refining Co., July 26.

Kansas—Prairie, Sinclair; Carter, The Texas Company, July 26.

Column 2—Arkansas and North Louisiana—[Caddo, Bull Bayou, Crichton, De Soto, Haynesville, Homer, and El Dorado only], Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., and Gulf Refining Co., August 2. Magnolia Petroleum Co. schedule effective August 7 applies to Pine Island, Haynesville, Bull Bayou, Louisiana, and El Dorado, Ark., light crude. The Texas Company August 8 posted prices below 28 gravity at 7 cents differential per degree with minimum of 60 cents for all below 25 gravity.

Column 3—February 6, Louisiana Oil Refining Co., February 7, Standard Oil Co. of Louisiana, The Texas Company, Gulf Refining Co., Magnolia Petroleum Co., and on February 10, Atlantic Oil Producing Co.

Column 4—Atlantic Oil Producing Co., Louisiana Oil Refining Corp., August 8.

Column 5—Humble Oil & Refining Co., July 26.

Column 6—Midwest Refining Co., July 26. All crude over 37 gravity $1.41 per barrel.

Column 7—Humble Oil & Refining Co. and other major buyers (schedule ends 35 and above). March 14, with exception of Magnolia Petroleum Co., which stops at 31 degrees gravity. Sun Pipe Line Co. and The Texas Company posted 2 cents differential for each degree above 35 gravity and $1.47 for 40 gravity and above.

Column 8—Grayburg Pipe Line Co. and Pioneer Oil & Refining Co., April 7.

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Corsicana heavy (March 14, 1927)*....$1.00
Other fields .....See gravity table

*Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE
Carson and Hutchinson

Below 32 gravity	$ .69
32-32.9	.76
33-33.9	.81
34-34.9	.86
35-35.9	.91
36-36.9	.96
37-37.9	1.01
38-38.9	1.06
39-39.9	1.11
40-40.9	1.16
41-41.9	1.21
42-42.9	1.26
43-43.9	1.31
44 and above	1.36

Wheeler County

Below 30 gravity	$ .65
30-30.9	.72
31-31.9	.79
32-32.9	.86
33-33.9	.91
34-34.9	.96
35-35.9	1.01
36-36.9	1.06
37-37.9	1.11
38-38.9	1.16
39-39.9	1.21
40-40.9	1.26
41-41.9	1.31
42-42.9	1.36
43-43.9	1.41
44 and above	1.46
Gray County	See gravity table

Humble Oil & Refining Co., and Magnolia Petroleum Co., July 26.

WEST TEXAS

Iatan* .....Same as North Texas
Crane-Upton-Crockett, Pecos, Winkler and Glasscock (July 26)‡.....0 .65
Chalk† 80

*Includes Howard County and Westbrook Fields. Marland Refining Co. pays $1.05 for Howard County crude, effective May 21.

†Magnolia Petroleum Co., January 14, 1928.

‡Posted by Humble Oil & Refining Co., Magnolia Petroleum Co., and Gulf Pipe Line Co.

ARKANSAS-NORTH LOUISIANA

Cotton Valley (Below 36 gravity April 11) .....$ .75
Bellevue (Feb. 27, 1927) 1.35
Urania (Oct. 16, 1928) ..... .90
East El Dorado (March 16, 1927) 1.00
Other fields .....See gravity table

*Cotton Valley crude above 36 gravity takes same gravity price schedule as shown for North Louisiana and Arkansas crude in Mid-Continent gravity price table.

Note—Cotton Valley and Bellevue posted by Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., Gulf Refining Co., and Magnolia Petroleum Co.; (Magnolia Petroleum Co. posted Cotton Valley February 8); Urania posted by Louisiana Oil Refining Corp.; East El Dorado, Magnolia Petroleum Co., Gulf Refining Co.

GULF COAST

(Goose Creek, Hull, Liberty, West Columbia, Orange, Boling, Sour Lake, Humble, Sugarland, Raccoon Bend, High Island, Pierce Junction and Spindletop.)

Grade A (March 14)* $1.20
Grade B .....See gravity table
Jennings, La. (March 14)† $1.05
Saratoga, Batson, Daytona (March 14, 1927)‡ 1.30
Markham (March 14)‖ 1.00
High Island (December 14)¶ 1.00

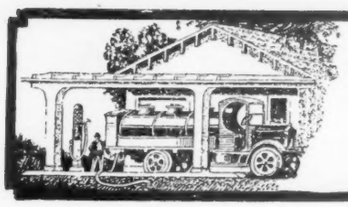
*Humble Oil & Refining Co. and other major buyers. †Gulf Pipe Line Co. ‡Sun Pipe Line Co. ‖The Texas Company. ¶Posted by Gulf Pipe Line Co.

ROCKY MOUNTAIN STATES
Ohio Oil Co.-Midwest Refining Co.
(Effective July 27, 1928)

Rock Creek, Wyo.	$1.33
Salt Creek	See gravity table
Big Muddy	1.33
Grass Creek, heavy	.90
Grass Creek, light	1.48
Mule Creek (May 1)	1.10
Elk Basin	1.48
Lance Creek	1.48
Poison Spider (March 14, 1927)	1.00
Notches (March 14, 1927)	.65
Rex Lake (February 22)	1.10
Osage	1.48
Lost Soldier (contract)	.95
Hamilton Dome (March 14, 1927)	.85
Greybull-Torchlight	1.48
Cat Creek (Montana)	1.48
Sunburst (Montana) (May 18, 1928)	1.65
Artesia	1.08
Hogback (New Mexico)	1.48

Note—Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Re-

(Continued on Page 134)



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns Jan. 1.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Chicago dist.	15.0	16.0	...	12.0
Decatur, Ill.	15.2	15.0	...	12.1
East St. Louis	14.4	16.4	...	11.2
Joliet	15.4	17.4	...	12.3
Peoria	15.2	14.0	...	12.1
Quincy	15.2	17.2	...	11.9
Davenport, Ia.	18.5	20.5	3.0	12.3
Des Moines	18.5	18.5	3.0	12.3
Keokuk	18.5	20.5	3.0	12.3
Sioux City	18.1	20.1	3.0	11.9
Duluth, Minn.	18.5	20.5	2.0	12.9
Mankota	18.1	20.1	2.0	12.7
Minneapolis	18.2	20.2	2.0	12.9
La Crosse, Wis.	18.2	20.2	2.0	13.0
Milwaukee	17.1	19.1	2.0	11.9
Madison	17.3	19.3	2.0	12.1
Detroit, Mich.	18.8	20.8	3.0	13.7
Grand Rapids	18.7	20.7	3.0	13.6
Saginaw	18.9	20.9	3.0	13.8
Evansville, Ind.	18.0	20.0	3.0	13.0
Fort Wayne	18.4	18.4	3.0	13.4
Indianapolis	18.2	18.2	3.0	13.2
South Bend	18.4	20.4	3.0	13.4
Fargo, N. D.	19.9	19.9	2.0	14.9
Huron, S. D.	20.3	22.3	4.0	13.7
Sioux Falls	19.1	21.1	4.0	13.4
K. C., Mo.*	17.9	17.9	3.0	10.6
Springfield*	17.8	19.8	3.0	11.5
St. Louis*	16.9	16.9	2.5	11.3
St. Joseph*	17.5	17.5	3.0	11.2
Wichita, Kans.	15.8	17.8	2.0	10.8
Bartlesville, Ok.	16.5	18.5	3.0	10.5

*State tax 2 cents; remainder city tax.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	14.7	12.9
V. M. & P. naphtha	16.2	13.9
Cleaner's naphtha	18.0	14.9
Stanisol	19.0	15.4

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

Less than 100 gallons	9.0
100 to 799 gallons	8.0
800 or more gallons	7.5

Note—Outside Chicago furnace oil discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

The following quantity discounts from the service station price are allowed on monthly sales of gasoline: 2,000 gallons or less, 2 cents; more than 2,000 and less than 6,000 gallons, 2½ cents; more than 6,000 gallons, 3 cents. Discounts are allowed each month, and they are not cumulative. Delivery tickets showing date and quantity delivered must be sent to the seller before the tenth of the month to secure the discount on the previous month's purchases.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Dallas, Tex.	16.0	20.0	2.0	12.0
Fort Worth	16.0	19.0	2.0	12.0
Houston	16.0	20.0	2.0	15.0
San Antonio	14.0	17.0	2.0	11.0
El Paso	17.0	20.0	2.0	16.0
Texarkana	16.5	20.5	2.0	13.0
Muskogee, Ok.	18.0	20.0	3.0	12.0
Okla. City	18.0	20.0	3.0	12.0
Tulsa	17.0	19.0	3.0	10.0
Ft. Smith, Ark.	18.0	20.0	3.0	14.0
Little Rock	21.0	23.0	5.0	14.0

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlanta, Ga.	22.0	24.0	4.0	16.5
Augusta	22.0	24.0	4.0	15.5
Macon	22.0	22.0	4.0	16.5
Savannah	21.0	23.0	4.0	14.5
Birm'ham, Ala.	22.0	24.0	4.0	16.0
Mobile	22.0	24.0	4.0	15.0
Montgomery	20.0	21.0	4.0	16.5
Clarks'le, Miss.	22.0	24.0	5.0	13.0
Jackson	19.0	21.0	5.0	14.5
Natchez	20.0	22.0	5.0	14.5
Gulfport	23.5	25.5	5.0	14.0
Vicksburg	21.5	23.5	5.0	14.0
Jack'ville, Fla.	23.0	25.0	5.0	13.5
Miami	24.0	26.0	5.0	15.5
Pensacola	24.0	26.0	5.0	13.5
Tampa	23.0	25.0	5.0	13.5
Lexington, Ky.	21.0	22.0	5.0	15.5
Covington	22.0	22.0	5.0	15.5
Louisville	21.0	23.0	5.0	15.0
Ashland	22.0	24.0	5.0	15.5
Catlettsburg	22.0	24.0	5.0	15.5

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. Pensacola and Mobile taxes includes 1-cent city levy. Gulf port tax includes privilege tax of 2 cents in addition to state tax.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Omaha	17.25	19.25	2.0	12.25
McCook	18.75	20.75	2.0	13.75
Norfolk	17.75	19.75	2.0	12.75
N. Platte	18.75	20.50	2.0	13.50
Scotsbluff	18.75	20.75	2.0	13.25

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Denver, Colo.	17.0	20.0	3.0	14.5
Pueblo	19.0	22.0	3.0	14.5
Grand Junction	22.5	25.5	3.0	18.0
Casper, Wyo.	19.0	22.0	3.0	13.0
Cheyenne	20.0	23.0	3.0	14.5
Butte, Mont.	23.5	26.5	3.0	19.0
Helena	23.5	26.5	3.0	19.0
Salt Lake, Utah	22.0	25.0	3.5	17.0
Albu'que, N. M.	22.0	25.0	5.0	17.0
Boise, Idaho	24.5	27.5	4.0	19.0
Twin Falls	24.5	27.5	4.0	19.0

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlantic City	17.0	20.0	2.0	13.0
Newark, N. J.	17.0	20.0	2.0	13.0
Annapolis, Md.	19.0	22.0	4.0	13.0
Baltimore	19.0	22.0	4.0	13.0
Cumberland	19.0	22.0	4.0	13.0
Washington	17.0	20.0	2.0	13.0
Danville, Va.	20.0	23.0	5.0	13.0
Norfolk	20.0	23.0	5.0	13.0
Petersburg	20.0	23.0	5.0	13.0
Roanoke	20.0	23.0	5.0	13.0
Richmond	20.0	23.0	5.0	13.0
Ch'rlst'n, W. V.	19.0	22.0	4.0	13.0
Keyser	19.0	22.0	4.0	13.0
Parkersburg	19.0	22.0	4.0	13.0
Wheeling	19.0	22.0	4.0	13.0
Charlotte, N. C.	19.0	22.0	4.0	13.0
Hickory	19.0	22.0	4.0	13.0
Mt. Airy	19.0	22.0	4.0	13.0
Salisbury	19.0	22.0	4.0	13.0
Ch'leston, S. C.	20.0	23.0	5.0	13.0
Columbia	20.0	23.0	5.0	13.0

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Albany, N. Y.	18.0	20.0	...	15.0
New York*	18.7	20.0	...	15.0
Buffalo	18.0	20.0	...	14.0
Rochester	18.0	20.0	...	14.0
Syracuse	18.0	20.0	...	15.0
Boston, Mass.	17.0	18.0	...	15.0
Augusta, Me.	21.0	22.0	4.0	15.0
Manch'r'r, N.H.	21.0	22.0	4.0	15.0
Burlington, Vt.	20.0	21.0	4.0	15.0

*Prices in steel barrels.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
N.Orleans, La.*	15.5	18.5	3.0	16.0
Baton Rouge	14.0	17.0	2.0	14.5
Alexandria	15.0	18.0	2.0	16.0
LaFayette	15.0	18.0	2.0	15.5
Lake Charles	15.5	18.5	2.0	16.0
Shreveport	15.5	18.5	3.0	15.0
Knoxv'le, Tenn.	19.0	22.0	3.0	16.0
Memphis	17.0	20.0	3.0	12.5
Chattanooga	18.5	21.5	3.0	16.0
Nashville	18.0	21.0	3.0	16.0
Bristol'd, Va.	19.0	22.0	3.0	15.0
Lit. Rock, Ark.	19.0	22.0	3.0	13.0

*Tax of 3 cents includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax and 1-cent parish tax.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

The Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa.	16.0	*20.0	...	14.0
Philadelphia	16.0	*20.0	...	14.0
Scranton	16.0	*20.0	...	14.0
Allentown	16.0	*20.0	...	14.0
Altoona	16.0	*20.0	...	14.0
Erie	16.0	*20.0	...	14.0
Dover, Del.	19.0	20.0	3.0	14.0
Wilmington	19.0	20.0	3.0	14.0
Springf'd, Mass.	18.0	18.0	...	14.0
Worcester	18.0	18.0	...	14.0
Boston	18.0	18.0	...	14.0
Providence, R.I.	20.0	20.0	2.0	14.0
Hartford, Conn.	20.0	20.0	2.0	14.0
New Haven	20.0	20.0	2.0	14.0

*Includes tax of 3.0 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the State.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
All Ohio points	19.0	20.0	3.0	12.0

PACIFIC COAST TERRITORY

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
San Francisco	17.0	21.0	3.0	15.5
Los Angeles	16.5	20.5	3.0	15.5
Reno, Nev.	22.0	26.0	4.0	19.0
Portland, Ore.	17.5	21.5	3.0	16.5
Seattle, Wash.	16.5	20.5	2.0	16.5
Tacoma	16.5	20.5	2.0	16.5
Spokane	20.5	24.5	2.0	20.5
Phoenix, Ariz.	18.0	22.0	4.0	20.5

LUB OIL SALES IMPROVE IN GULF COAST SECTION

HOUSTON, Tex., Jan. 1.—Following a week of inactivity spot sales of Gulf Coast lubricating oils picked up noticeably as the week opened and indications pointed to at least a short period of fair demand for seasonal grades. The sudden increase in business Monday probably was due to the fact that buyers had permited their stock to dwindle during inventories of the last week of the year and today were in the market to replenish their supplies.

Sales continued chiefly in the lighter viscosity oils, and no immediate general changes in prices are anticipated. Fuel oils Monday were looking upward although outwardly there was no important change in their situation and prices held fairly steady. Gas oils continued firm.

DEATH OF MORRIS SHEAR

Morris Shear, one of the revered Old Guard of the oil industry, died at his home in Bradford, Pa., on Christmas day. Mr. Shear had been an oil producer for some years before the boom in the Bradford Field was well under way in 1877. He went from Petroleum Center to Bradford and operated in that field, and in the early days of the Oklahoma Field was a producer in the Bird Creek district.

Until two years ago Mr. Shear divided his time between Bradford and Tulsa. He had a very wide acquaintance among oil men and was highly regarded by those who knew him.

LAGO PRODUCTION

NEW YORK, Dec. 31.—Lago Oil & Transport Co., subsidiary of Standard Oil Co. of Indiana, produced 904,766 bbls. of crude in Venezuela during the week ended December 21. This was an average of 129,252 bbls. a day, and compared with 910,835 bbls., or 130,119 bbls. per day, in the previous week. Shipments were 638,746 bbls., a daily average of 91,249 bbls., against 678,592 bbls., or 96,941 bbls. daily, in the preceding week.

Record production for the company was 913,868 bbls., or 130,553 bbls. daily, in the week ended November 29, this year.

CREOLE PRODUCTION

NEW YORK, Dec. 31.—Creole Petroleum Corp., a Standard Oil Co. of New Jersey subsidiary, reports production of 41,382 bbls. daily from its Venezuelan properties, operated by Gulf Oil Corp., for the week ended December 21. Of this total, Creole's share was 20,308 bbls. a day. Output for the previous week averaged 40,947 bbls. a day, giving Creole 20,036 bbls. daily.

TRADE COMMISSIONER RESIGNS

Abram F. Myers, chairman of the Federal Trade Commission, has announced his resignation to take effect at the pleasure of the President. It is understood that Mr. Myers will take a position in the motion picture industry.

EMERSON RESIGNS

John E. Emerson, oil buyer for the Prairie Oil & Gas Co., has resigned to go into the oil business for himself. He will be succeeded by John P. West, who has been in charge of the company's Panhandle land department at Amarillo, Tex.

BUILDING STORAGE

SAN ANTONIO, Tex., Dec. 29.—The Texas Pipe Line Co. (The Texas Corporation) plans to build two 35,000-bbl., two 40,000-bbl. and one 80,000-bbl. storage tanks in Pecos County at pump station under construction in Section 60, Block 1, due east of Iraan.

HUMBLE ENTERS LULING

HOUSTON, Tex., Dec. 31.—With the increasing importance of the new Brune extension district of the Luling Field of Caldwell County, Southwest Texas, Humble Pipe Line Co. has announced it will lay a gathering system in the field. The system will aggregate 5 miles of 4-inch line. The system will be laid to the loading rack of the Rio Bravo Oil Co., which the Humble company has contracted to use. The system is being laid chiefly to run the production of the Humble Oil & Refining Co. and marks the entrance of the company into the Luling area as a buyer.

CRUDE OIL PRICES

(Continued from Page 133)

fining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

SOUTH CENTRAL AND SOUTHWESTERN TEXAS

Luling (May 5)*	$1.10
Mirando (March 14)†	1.80
Rockdale-Minerva (April 15):	
Below 38 gravity	1.15
38-38.9 gravity	1.17
39-39.9 gravity	1.20
40 and above	1.21
Thrall‡	
Callihan (May 15)	1.75
Lytton Springs (Lockhart)	See gravity table
Somerset	See gravity table

*Posted by Magnolia Petroleum Co.
†Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co.
‡Thrall prices same as North Central Texas less 19½ cents per cwt. freight.

EASTERN STATES

Joseph Seep Purchasing Agent
(Effective December 14, 1928)

Penna. Grade Oil in New York Transit Lines (New York)	$1.61
Bradford District Oil in National Transit Lines (Pennsylvania)	1.61
Penna. Grade Oil in National Transit Lines (Pennsylvania)	1.75
Penna. Crude Oil in Southwest Pennsylvania Lines (West Virginia)	1.75
Penna. Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	1.65
Penna. Grade Oil in Buckeye Pipe Line Lines (Ohio)	1.60
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia) (July 13)	1.55
Corning 35-cent Grade Oil in Buckeye Pipe Line Co.'s Lines (December 17)	1.80
Corning 25-cent Grade Oil in Buckeye Pipe Line Co.'s Lines (December 17)	1.80
Somerset Oil in Cumberland Pipe Line Lines (Kentucky) (Sept. 14, 1928)	1.70
Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky) (August 1)	.8

MIDDLE WESTERN STATES

Ohio Oil Co.
(Effective July 27, 1928)

Lima	$1.60
Wooster (October 17)	1.70
Illinois	1.50
Indiana	1.57
Princeton	1.50
Plymouth	1.50
Waterloo (November 17, 1926)	1.50
Western Kentucky* (Sept. 17, 1928)	1.65
Saginaw, Mich., Saginaw Sand (February 10)†	1.70
Saginaw, Mich., Berea Sand (February 10)†	1.70
Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky, (March 16)‡	1.50
Oil in lines of Stoll Oil Refining Co. in Oil City, Ky. (Oct. 1, 1928)§	1.75
Oil Springs (Canada)¶	2.00
Petrolia (Canada)¶	2.00

*Posted by Ohio Oil Co.
†Posted by Sun Oil Co.
‡Posted by Paragon Development Co.
§Posted by Stoll Oil Refining Co.
¶Posted by Imperial Oil Co., Ltd.

MEXICAN CRUDE

Panuco heavy (f.o.b. Mexican ports)	$1.35

Note—Due to the fact that the exportation of Tuxpan light crude has become a negligible factor, prices will no longer be published.

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

REFINING OF PETROLEUM

Could I trouble you to send me a list of publications covering the subject of the refining of petroleum products and especially such recent articles on this subject that have appeared in recent trade or engineering journals?—F. S. H.

The following books contain much information on the refining of petroleum.

Handbook of the Petroleum Industry, 2 vols., David T. Day, published by John Wiley & Sons, New York.

American Petroleum Refining, by Bell, published by D. Van Nostrand Co., New York.

Petroleum and Its Products, by Gruse, published by McGraw-Hill Book Co., New York.

Petroleum Technology, by Gurwitch, Moore, published by D. Van Nostrand Co.

Complete abstracts of recent articles on petroleum refining are to be found in Chemical Abstracts, which is published twice a month by the American Chemical Society.

I believe you will find all of the above in your local public library.

CUT OR EMULSIFIED OIL CAUSE AND TREATING METHODS

Is the formation of cut oil caused by the mixture with air or gas, or is it some kind of chemical action? What are the best methods for treating this kind of oil? Can you recommend some book which deals with this subject?—N. H.

The formation of cut or emulsified oil may be either a mechanical mixture of the particles of oil with air, gas, or water; but more often the condition is the result of a chemical combination. Some water is frequently produced in a well, for example, with oil and this water may contain lime, magnesium, salts, and other chemical compounds which tend to form insoluble substances that remain suspended in the oil after the mixture has been agitated.

When the emulsion is strictly mechanical, such as may be caused by gas or the introduction of air, the condition is temporary and complete separation will follow in the storage tanks. The same is true when a water practically free from mineral matter is mixed with the oil.

In the early days of the industry oil field emulsions were wasted and drained away with the salt water. The pollution of many streams resulted and producers were forced to build sumps where the accumulations were burned. Every oil field has such sumps today. Large quantities of oil are recovered by simply skimming these sumps, and as an outgrowth of this method systems of settling basins, tightly covered to prevent excessive evaporation, were devised, in which steam coils supplied heat to the body of cut oil.

After the discovery that the application of heat to cut oil frequently gave a good separation of oil and water, many different systems of heat treatment were devised. In some the cut oil is heated only a few degrees, while in others it may be partly distilled. In the latter method water is not only drawn off from the bottom of the still, but is also taken overhead with some of the lighter hydrocarbon distillates.

Chemical treatment was attempted in the early study of the cut-oil problem. Reagents such as lye and lime were used extensively with fair success for some emulsions. The late W. S. Barnickel devised a treatment, which involved the use of a series of compounds and was a vast improvement over similar methods used at the time.

In California the principles developed in connection with the electrical precipitation of smoke and dust were applied to petroleum emulsions, and the electrical dehydration process was evolved. This process has been especially successful in the California and Gulf Coast Fields. Mechanical dehydration, in which centrifugal force is utilized to separate cut oil into free oil and water, has shown good results in some fields.

You will find the above methods described in more detail in United States Bureau of Mines Bulletin No. 250, Oil Field Emulsions, by D. B. Dow.

DISPOSAL OF CRANKCASE OIL

Complaint is made that our waste crankcase oil should not be dumped into the sewers. Will you explain what is the possible damage and if other cities treat the sewage to recover the oil? Is such recovered oil of any value?—N. B. C.

Waste crankcase oil has long been a source of trouble in sewers of all cities and there have been explosions in sewers resulting from the gasoline contents of this refuse oil. There is another objection that the oil prevents the growth of bacteria so that plants for the treatment by bacterial action will not function. The city of Washington, D. C., has made an investigation of this subject under the direction of the Bureau of Standards and this work was described in an article in The Oil and Gas Journal, November 8, 1928, page 144.

Numerous city engineers of the United States and foreign municipalities replied to questionnaires sent out in connection with the general survey to show world-wide conditions in the disposition of waste crankcase oil.

These municipalities stated the various dispositions they are making of the accumulations of waste crankcase oil by and at garages, auto repair shops, and filling and service stations. The result has been the formulation of a plan for the establishment of a plant here to re-refine waste crankcase oil under a contract with some private concern with the District of Columbia Government. The District Government itself uses about 50,000 gallons of lubricating oil per annum in its own automotive vehicles and it has been conservatively estimated that under the plans of enforcing the retention and systematic disposition of waste crankcase oil, so that it will no longer find its way into the sewer system, there will be at least 200,000 gallons a year available for collection for rerefining.

Oils deteriorate in use, but when properly rerefined, may be as good as new. If a used oil is rerefined by a suitable process, the product may be as good or even better than the original oil.

Comparison of Properties of New, Used and Rerefined Oils From Two Government Departments

Test	Post Office Depart. New	Post Office Depart. Used	Post Office Depart. Rerefined	Public Bldgs. & Parks New	Public Bldgs. & Parks Used	Public Bldgs. & Parks Rerefined (a)	Public Bldgs. & Parks Rerefined (b)
Saybolt viscosity, 210 degrees F.	....	....	47	48	....	50	51
Saybolt viscosity, 100 degrees F.	318	133	340	317	170	367	380
Flashpoint, degrees Fahrenheit	355	....	345	345	....	345	355
Union color number	5	....	7	4½	....	5	5
Pour point, degrees Fahrenheit	B 20	....	B 20	B 20	....	B 20	B 20
Neutralization number	0.13	....	0.05	0.03	....	0.05	0.05
Carbon residue, per cent	0.07	....	0.11	0.11	....	0.15	0.14
Sligh oxidation number	....	....	29	28	....	22	23
Ash, per cent	0.01	0	....	0.00	0	0	0
Dilution, per cent	....	10	0	....	8	0	0

(a) Run No. 5; (b) Run No. 8.

The table above shows test on oils from the Post Office Department and from the office of Public Buildings and Grounds, where a direct comparison is possible between new and rereclaimed oils. (Note: "Rerefined" oils is evidently meant.) In one case there is a loss of 10 degrees Fahrenheit in the flashpoint and in another case a gain of an equal amount, so that it may be concluded that it is possible to get practically as high a flashpoint in the rerefined oil as in the new oil. There is a slight gain in viscosity.

Tests of Used and Rerefined Oil From a Public Filling Station

Test—	Used	Refined Run 3	Refined Run 9
Saybolt vis., 210 deg. F.	....	58	57
Saybolt vis., 100 deg. F.	253	442	428
Flashpoint, deg. F.	....	390	375
Union color No.	....	8	7
Pour Point, deg. F.	....	B 20	B 20
Neutralization No.	....	0.05	0.05
Carbon residue, per cent.	....	0.57	0.42
Sligh oxidation No.	....	13	14
Ash, per cent	0.09	0	0
Dilution, per cent	8	0	0

This table shows that a satisfactory oil may, at times, be made from crankcase drainings.

HEAVY OILS FOR MOTOR FUEL

It is recognized that large engines such as the Diesel operate satisfactorily with various heavy oils for fuel. Has any attempt been made to produce a small engine for automobiles to operate with similar oils?—H. S.

There are numerous reports indicating more or less success with motor type engines which use the heavier oils as a source of power. In fact all sorts of materials have been used in place of gasoline. One engine is reported to have used scraps of wood, see this department page 148, November 25, 1926. The operation of an airplane motor with 28 A.P.I. oil was mentioned in this connection on page 154, January 19, 1928. More recently a prominent company has announced the perfection of a modified Diesel engine for airplane use.

The Royal Automobile Club has presented the results of two trials where heavy oils were used in motors.

The first trial was conducted on a Mercedes-Benz lorry and the fuel used was a gas oil with a gravity of 32 degrees A.P.I., and a closed flashpoint of 185 degrees Fahrenheit. The total distance run was 51½ miles, and the average speed was 7.9 miles per hour. The fuel consumption was at the rate of 6.58 miles per gallon, equal to 130.2 gross ton miles per gallon and 80.8 net ton miles per gallon. When starting from cold, current was passed to the heating element for 30 seconds, and the engine was started by the self-starter 10 seconds later. In the trials the longest period between stopping and restarting the engine was an hour, but here the heating element was not used. The total weight of lorry and trailer was 19 tons 15½ cwt. approximately. In the second trial with a similar lorry but no trailer, and with a total weight of 11 tons 12½cwt. approximately, a distance of 691¾ miles was covered, the fuel consumption being at the rate of 13.48 miles per gallon. In this case the fuel was gas oil.

See answer to A. E. J. this page of The Oil and Gas Journal, December 20, 1928.

NATURAL GASOLINES AND STABILIZING TREND

In the January 26, 1928, issue of The Oil and Gas Journal, page 151, there appeared an article "Stabilizing Trend in Manufacture of Natural Gasolines" with estimates of the various grades made in the Mid-Continent this year. Are statistics at hand, covering the period of the last three years, for the entire country showing the deliberate effort on the part of the natural gasoline manufacturer to meet the refiners' demand for lower vapor-pressure gasoline?—F. L. K.

Data are not available showing the character of natural gasoline made in the United States during the past three years. However, since the Mid-Continent area produces approximately one-half of all the natural gasoline manufactured, it is believed that any definite trend which has been demonstrated there will be representative for the entire country. There is a marked demand for more and more of the AA and A grades of natural gasoline.

The material below is from the article mentioned.

"Percentage of various grades of natural gasoline made in the Mid-Continent as estimated by four major manufacturers and marketers."

Grades	Percentage			
A	1	10	5	5
AA	84	60	55	45
B	1	2	5	3
BB	6	18	20	22
C	8	10	15	25

These estimates were based on a yearly operation and it was pointed out that during the winter months, the production of the lighter grades would be materially increased.

The division of the production by grades emphasizes the rapid tendency to produce the more stable grades. Refiners who practice storing natural gasoline with their gasoline during the winter insist on the high recovery grades in order to minimize their storage losses. Likewise, natural gasoline manufacturers are gradually finding it to their advantage to store their products and to produce a stable product. Then as more of the gasoline is sold without blending direct for motor use, a superstabilization must be effected. The limiting factor in this tendency to stabilize is of course the price differential observed between the various grades.

When all grades are rather plentiful manufacturers produce the maximum quantities of the stabilized product. When prices are low buyers seek the better grades. Stabilizing also materially reduces the recovery, and when natural gasoline is generally scarce and the price differentials small, the manufacture of the lighter grades is favored.

Oil Securities Had Rather Quiet Week

Fail to Weaken During General Decline Caused by Advance of Call Money Rate, or to Follow Bullish Spurt

By Special Correspondent

The oil stocks were rather quiet during the past week, failing to weaken during the general decline caused by the advance in the call money rate to 12 per cent; and again failing to follow the bullish trend of the market on Monday of this week.

Monday's activity was probably the heaviest trading in oils of the entire week. The expected orgy of "tax selling" failed to materialize, and what selling orders were registered failed to shake down the oil list.

Prairie Oil & Gas, after being introduced to a position on the big board instead of the Curb Exchange where it has previously been traded in showed good strength, and touched 64⅝. Barnsdall was strong at the close with 42¾, and Independent Oil & Gas was rather strong all week.

Cash Dividend Record

Cash dividends by the Standard Oil group for the year just ending are the highest for any year since dissolution of the old Standard Oil Co. of New Jersey in 1911, aggregating $222,337,321. The previous high was $213,760,695, last year. The closing quarter of 1928 establishes a new high record for any quarter in the history of the group, amounting to $64,722,485, more than $2,000,000 over the previous high of $62,685,500 in the closing quarter two years ago.

Up to the close of 1928, the Standard Oil group has distributed a total of approximately $3,590,839,078 in cash and stock dividends since dissolution of the parent company in December, 1911. This is a yearly average of $211,214,063 per annum for that period. Of this total, $2,131,398,783 represent cash disbursements and the remainder in stock dividends at par. In addition, many millions were actually added in the rights to subscribe to $400,789,144 par value of common and preferred stocks offered to stockholders of the various companies, and the preference given in 1926 to Standard Oil Co. of New Jersey stockholders to subscribe to that company's 5 per cent 20-year debentures at 100½.

Standard Oil Co. of California leads the group in cash dividends this year, with a total of approximately $37,782,000, against $36,475,828 by Standard Oil Co. of New Jersey, which hitherto has been the group leader.

Standard of Indiana has paid in dividends this year approximately $32,310,000, with Standard of New York coming next with about $27,390,000. Vacuum Oil Co. has paid $18,880,315 in cash this year, and in April distributed a 100 per cent stock dividend.

A record of cash dividends by the group as whole for the years 1912 to date follows:

1912	$51,586,634
1913	107,795,361
1914	62,692,884
1915	62,401,204
1916	98,627,875
1917	99,957,923
1918	103,470,916
1919	105,901,477
1920	115,776,793
1921	115,294,292
1922	129,039,865
1923	138,423,295
1924	150,388,555
1925	153,506,099
1926	200,327,594
1927	213,760,695
1928	222,337,321

The total of $1,450,888,795 in stock dividends at par by the Standard Oil group since the dissolution does not include distributions to be made early in 1929 by South Penn Oil and Prairie Pipe Line Co. The following table, compiled by Dow-Jones & Co., shows stock dividends by the various Standard Oil companies and subscription rights offered to stockholders since the dissolution in 1911, figured at par:

Company—	Stock dividend	Subscription
Anglo American	$10,000,000	*$5,000,000
Atlantic Refining	45,000,000	†20,000,000
Borne-Scrymer	800,000	.....
Chesebrough Mfg.	2,500,000	†1,000,000
Continental Oil	8,960,000	†8,900,000
Cumberland P. L.	1,500,000	.....
Galena S. O.	4,000,000	†4,000,000
Imperial Oil	11,000,000	.....
Ohio Oil	65,000,000	.....
Prairie Oil	62,000,000	.....
Prairie P. L.	54,000,000	.....
Solar Refining	3,500,000	.....
South Penn Oil	15,000,000	2,500,000
S. O. of California	151,927,590	50,120,374
S. O. of Indiana	181,360,455	.....
S. O. of Kansas	7,000,000	.....
S. O. of Kentucky	22,551,500	2,000,000
S. O. of Nebraska	2,400,000	.....
S. O. of New Jersey	397,929,700	‡286,205,825
S. O. of New York	281,620,400	.....
S. O. of Ohio	10,500,000	†2,562,945
Union Tank	12,141,100	†6,000,000
Vacuum Oil	107,809,550	12,500,000

*At 150 per cent of par, realizing $7,500,000.
†Preferred.
‡Includes $199,972,900 preferred and $86,232,925 common at par.

Stockholders of Standard Oil Co. of Kentucky have approved an increase in authorized capital to $35,000,000 of $10 par value from $17,500,000 of $25 par. The reduction in par value, in the form of a 2-for-1 split-up, increases from 684,120 to 1,710,300, the number of shares outstanding. A 50 per cent stock dividend has been ordered for December 31, 1928, on the new stock, bringing the total outstanding to 2,565,450 shares. This stock dividend amounts to 855,150 shares, or, at $10 par, to $8,551,500.

Atlantic Refining Co. this year increased its common stock from $50,000,000 to $100,000,000, reducing par from $100 to $25 per share. Of the total authorized capital of 4,000,000 shares of common, 2,000,000 are outstanding.

Stockholders of Prairie Pipe Line Co. are scheduled to meet January 4 to vote on a reduction in par from $100 to $25 per share, increasing the number of shares outstanding from 810,000 to 3,240,000. A stock dividend of 25 per cent will be paid on the new stock, adding 810,000 shares of $25 par, or $20,250,000.

A 50 per cent stock dividend will be

TWENTY REPRESENTATIVE STOCKS

The Oil and Gas Journal weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb was as follows:

Dec. 31	80.19	Nov. 12	78.27	Sept. 22	67.12
Dec. 24	78.43	Nov. 5	75.99	Sept. 15	67.06
Dec. 17	78.43	Oct. 29	75.02	Sept. 8	66.70
Dec. 10	77.65	Oct. 20	70.05	Sept. 1	66.80
Dec. 3	83.67	Oct. 13	68.03	Aug. 27	65.70
Nov. 26	83.56	Oct. 6	67.55	Aug. 20	65.61
Nov. 19	80.55	Sept. 29	67.93	Aug. 13	65.10

OIL BONDS ON THE NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members New York Stock Exchange Kennedy Bldg., Tulsa, Okla.

Amount outstanding	Company—	Date	Pct.	Int.	For week ended Dec. 21— Sales	High	Low	Close
.....	Atlantic Refining Co.	July 1937	5	J&J	5,000	101⅛	101⅛	101⅛
18,864,500	Barnsdall Oil with war.	Dec. 1940	6	J&D	134,000	132	127	130½
6,000,000	Barnsdall Oil without war.	Dec. 1940	6	J&D	443,000	99¾	99⅝	99⅝
11,400,000	California Pet. conv. deb.	Nov. 1938	5½	M&N	No sales.			
7,400,000	California Pet. conv. deb.	Feb. 1939	5	F&A	8,000	101⅜	100⅝	100⅝
.....	General Petroleum	Aug. 1940	5	F&A	24,000	101	100⅝	100⅝
25,000,000	Humble O. & R. deb.	July 1932	5½	J&J	26,000	101¾	101½	101⅝
24,239,000	Humble O. & R. deb.	Apr. 1937	5	A&O	83,000	100¼	100	100⅛
10,103,000	Mid-Cont. Pet. Corp.	Mar. 1940	6½	M&S	20,000	105	105	106
3,745,000	Pan-American Pet. & T.	Aug. 1930	7	F&A	No sales.			
10,161,900	Pan-American Pet. & T.	Nov. 1934	6	M&N	3,000	104⅛	103½	104⅛
40,000,000	Phillips Pet.	June 1939	5¼	J&D	25,000	93¾	93	93⅝
.....	Pierce Oil deb.	June 1931	8	J&D	1,000	106	106	106
.....	P. & R. Corp.	Dec. 1931	8	J&D	No sales.			
.....	P. & R. Corp. without war.	June 1931	8	J&D	No sales.			
20,000,000	Pure Oil	Aug. 1937	5½	F&A	59,000	100	99½	100
30,000,000	Shell Pipe Line Co.	Nov. 1952	5	M&N	62,000	97	96⅝	96⅝
50,000,000	Shell Union Oil Co.	May 1947	6	M&N	81,000	98¾	97⅝	97⅞
3,431,500	Simms Pet. Co.	Nov. 1929	6	M&N	1,000	100	100	100
44,816,500	Sinclair Co. Oil Co. A	Mar. 1937	7	M&S	86,000	102¾	101¾	102⅜
33,086,500	Sinclair Co. Oil Co. B	Mar. 1938	6½	J&D	22,000	100¾	100	100⅜
20,000,000	Sinclair Co. Oil Co. D	Sept. 1930	6	M&S	42,000	99½	99⅛	99⅜
.....	Sinclair Cr. Oil Pur. Co. A	Jan. 1938	5½	J&J	40,000	97⅝	97	97
.....	Sinclair Pipe Line Co.	Oct. 1942	5	A&O	71,000	94⅝	93⅛	93⅛
15,000,000	Skelly Oil Co.	Mar. 1939	5½	M&S	17,000	93½	93	93⅜
.....	Standard Oil of N. J.	Dec. 1946	5	F&A	75,000	103⅛	102⅜	102⅞
.....	Standard Oil of N. Y.	Dec. 1951	4½	J&D	34,000	97⅝	96½	97
.....	Union Oil of Calif.	Jan. 1931	5	J&J	No sales.			
.....	Superior Oil Co.	Feb. 1929	7	F&A	No sales.			
8,934,500	Union Oil of Cal. 20 yr. A	May 1942	6	F&A	2,000	109	109	109
9,419,000	Union Oil of Cal. series C	Feb. 1935	5	A&O	No sales.			
4,870,000	White Eagle Oil & Ref.	Mar. 1937	5½	M&S	20,000	105¼	104¾	105

INDEPENDENT OILS ON THE NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Kennedy Building, Tulsa, Okla.
Members New York Curb Market

1926 High	1926 Low	1927 High	1927 Low	1928 High	1928 Low	Par Value	Stocks	For week ended December 28— Sales	Open	High	Low	Last	Change
$6.75	.45	2 7/16	.55	1½	.66	$5	Amer. Con. Oilfields	7,800	....	67	60	60	....
..	..	7½	2¾	9½	3⅛	N.P.	Amer. Maracaibo	18,100	7¼	8¼	6½	8¼	+ 1½
..	..	2¾	1	4½	2¼	$10	Argo Oil	600	....	3⅝	3¼	3⅝	+ ⅛
85¼	60	40	20½	55	32⅞	N.P.	British American	No sales.					
28⅜	9¼	28¼	15½	4½	3⅞	25c	Carib. Syndicate (new)*	4,600	4⅛	4¼	3⅞	4	— ⅛
..	..	58¾	40¼	90⅞	54	$20	Cities Service	48,900	87¾	88⅝	87⅜	88½	+ ⅝
..	..	95⅜	87	103½	94½	100	Cities Service, pfd.	1,000	98⅝	98¼	97⅞	97⅞	— ⅛
..	..	8⅞	7⅜	9⅝	8⅞	10	Cities Service, pfd. B	300	9⅛	9⅛	9⅛	9⅛	....
3½	1¾	3⅞	1⅛	2¼	1 1/16	1	Colombia Syndicate	11,300	1⅛	1 1/16	1 1/16	1 1/16	—1/16
..	..	9¾	6⅜	8⅛	6½	10	Consolidated Royal	1,600	7	7	6½	7	+ ½
16	10	14⅞	9½	19⅜	10	N.P.	Creole Syndicate	42,100	....	10	9½	10	....
..	..	3	.50	2¾	.76	N.P.	Crown Central	6,900	1½	1⅝	1⅜	1⅜	— ⅛
7⅞	6¾	12	4	31	8⅛	N.P.	Darby Petroleum	1,200	24	24½	24	24½	+ ½
..	..	2½	74	2¼	1	N.P.	Derby Oil & Refining	No sales.					
..	..	16¾	4	21	7½	N.P.	Derby Oil & Refining, pfd.	No sales.					
..	..	2	.40	.53	.15	N.P.	Gilliland ctfs.	No sales.					
98	92	118	86¼	165	101⅛	$25	Gulf Oil Corp.	3,800	143	146¾	143	145¾	+ 1⅜
$3 00	.83	2½	.80	2¾	1	5	International Pet.	25,700	2⅛	2¼	2	2	— ⅛
..	..	2¼	1⅛	3	1¼	N.P.	Kirby Petroleum	2,800	1½	1⅞	1½	1⅞	+ ⅜
12¼	5¾	10⅞	5⅛	9⅜	5⅛	25	Leonard Oil & Dev.	8,400	5¼	5½	5⅛	5⅛	— ⅛
27	20	27½	20	40½	20	N.P.	Lion Oil & Refining	2,800	32	32⅜	31⅛	32⅛	+ ⅛
46	30	59⅜	37	69⅛	49	$25	Lone Star Gas	100	67¼	67¼	67¼	67¼	— ⅛
2⅞	1	2⅞	.80	1⅞	.50	1	Magdalena Syndicate	6,400	....	64	55	60	+ 5
34	12½	52	12	45	34½	N.P.	Margay Oil	400	32	33⅜	32	32	— 2
8	5½	12⅛	5	8	3	N.P.	Mexico-Ohio Oil	2,200	3½	3⅞	3½	3⅞	+ ⅛
1¾	1⅛	1½	1	1½	.81	$1	Mountain & Gulf	3,100	1⅛	1⅜	1⅛	1⅜	+ ⅛
26	23	29¼	22¾	28⅝	21½	10	Mountain Producers	44,000	22	22	20¼	21⅛	— 1⅛
6⅝	5	5⅞	4⅝	5⅝	4¼	5	New Bradford	800	5¼	5¼	5	5	— ⅛
..	..	16	9¼	11⅜	7⅛	1	New Mex. & Ariz.	600	7⅝	7⅞	7⅜	7⅜	— ⅛
..	..	12¾	9½	13¼	10⅛	N.P.	North Central Texas	No sales.					
10⅛	5⅞	9⅜	3¼	6	2¼	N.P.	Pandem	1,000	2⅜	2⅝	2⅜	2⅜	— ⅛
12¼	11¾	12¼	7	15⅝	8½	N.P.	Pantepec Oil	18,200	10¾	11	10	10¼	— ⅜
22¾	12	13½	5⅛	7¾	5⅛	N.P.	Pennok Oil	600	6⅞	6⅞	6⅞	6⅞	+ ⅛
17	8½	24⅜	7	17¾	9	25	Red Bank Oil	No sales.					
30¼	12	15½	3½	12⅞	4⅛	N.P.	Reiter-Foster	3,100	6⅞	7	6¾	6⅞	— ⅛
7	4½	7	4½	10¾	4⅝	N.P.	Ryan Consolidated	4,800	....	9⅝	9	9½	+ ⅜
10	7⅛	8	5¼	7¼	5⅜	$10	Salt Creek Cons.	No sales.					
35	24½	35½	27¼	35	23¼	10	Salt Creek Prod.	8,900	26⅞	27⅜	24⅛	26⅞	....
6⅞	1¼	7	1¼	3½	1	5	Savoy Oil	1,500	1⅜	1⅜	1⅜	1⅜	— 1⅛
27	7⅝	26½	17	22⅞	13	10	Tidal Osage	600	16	15	13⅞	14⅞	— ⅛
25¾	7⅝	23¾	15	21¼	13⅛	10	Tidal Osage, nonvoting	1,800	13½	13⅝	13⅜	13⅜	— ⅛
92	63½	92	63½	91⅞	75	100	Transcontinental, pfd.	900	89	90	89	89	+ 3
8	4½	7⅜	4¼	8¼	4⅞	5	Venezuelan Petrol	22,800	6⅛	6⅛	5	5⅝	— ⅜
8⅛	5½	8	4¾	8¼	4⅞	$1	Woodley Petroleum	500	6¾	6⅞	6⅝	6⅝	— ⅛
6½	6	6	1¾	8⅜	2⅛	25	Y Oil & Gas (new)	100	4¼	4¼	4¼	4¼	....

*Ex-dividend.

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members of New York Stock Exchange, Kennedy Building, Tulsa, Okla.

1926 High	1926 Low	1927 High	1927 Low	1928 High	1928 Low	Listed capital	Par value	Stocks—	Div. rate	Last paid	For week ended December 28 Sales	Open	High	Low	Last	Change
32⅞	24¼	37⅝	27⅝	43⅞	27⅛	(sh) 922,075	N.P.	Amerada Corp.	50cQ	Oct. 31, 28	4,300	38⅜	38⅝	37½	38	— ⅝
74	39⅞	82½	35⅛	85	51¼	(sh) 209,180	N.P.	American Republics Corp.	.....	.....	14,200	60	62⅞	58½	61	+ 1⅞
60	44⅜	50¼	35	53⅜	37½	$57,260,300	$25	Associated Oil	50cQ	Dec. 31, 28	430	....	44	43	43¾	— ¼
128⅝	97	131⅜	104	59½	50¾	50,000,000	25	Atlantic Refining	25cQ	Dec. 15, 28	214,000	56½	63½	55⅞	62½	+ 6¼
33½	23½	35½	20¾	53	20	35,194,000	25	Barnsdall Corp.	50cQ	Feb. 5, 29	44,000	41⅜	41⅝	39⅝	40⅞	— ⅜
94¼	50	96¾	65	94⅞	68	20,785,400	100	General Asphalt	.....	.....	10,500	73⅜	75½	73	74½	+ 1¼
72	50¼	175¾	60⅛	167	79	25,000,000	100	Houston Oil	.....	.....	13,000	85	95	83	94¼	+ 9⅛
34	19⅝	32¾	17⅝	37½	21¾	(sh) 959,457	N.P.	Independent Oil & Gas	50cQ	Jan. 31, 29	48,400	32⅝	35½	31¾	35	+ 3
12¾	7½	12⅛	7⅝	39⅝	9	8,203,080	$10	Indian Refining	.....	May 31, 24	6,200	29	30	28¼	29½	+ ½
25⅞	16½	37¾	20½	39⅛	27⅜	(sh) 3,992,122	N.P.	Lago Oil & Transport	.....	May 1, 27	700	....	31	30½	30⅝	— ⅞
19⅞	12	18⅛	10	19¾	9⅜	(sh) 1,237,078	N.P.	Louisiana Oil Refining	.....	.....	11,500	15⅛	14⅞	14	14	— ⅝
28	16½	22¾	12	25½	12½	(sh) 330,000	N.P.	Maracaibo Oil	.....	.....	2,100	....	17⅞	16¼	16½	— 1⅜
63⅜	49¼	58½	31	49¾	33	(sh) 2,316,692	N.P.	Marland Oil Co.	.....	Mar. 31, 27	27,200	42½	42	40¼	41	— 1
13¾	6	9¼	3	73	4⅝	(sh) 945,939	N.P.	Mexican Seaboard	.....	Dec. 15, 20	209,700	61	65⅜	59⅝	64⅜	+ 2⅜
37	20½	39⅜	25½	44½	25⅛	(sh) 1,357,461	N.P.	Mid-Continent Petroleum	50cQ	Feb. 15, 29	20,800	38	37¾	36½	37	— ⅛
104¼	90	105	97	117	103¼	$6,718,000	$100	Mid-Continent Petroleum pfd.	$1.75Q	Sept. 1, 28	600	117	120⅛	118¼	120¼	+ 3¼
2½	½	3¾	1⅝	7¾	2⅜	24,298,850	10	Middle States	.....	July 1, 23	22,700	4½	4⅝	4⅛	4¼	— ⅜
76½	56⅛	65⅞	40⅛	55½	38¼	$48,807,400	$50	Pan American P & T.	.....	Oct. 20, 27	1,400	47	47	46	46	— 1
78⅝	56⅞	66⅜	40¼	58⅞	37⅜	121,097,900	50	Pan American P. & T. B	.....	Nov. 15, 24	24,000	48⅞	49⅛	47⅜	48⅜	— ⅜
46	30	37⅞	16¾	28⅜	15½	(sh) 400,000	N.P.	Pan American Western B	.....	Jan. 30, 27	1,700	....	17	16¾	16¾	— 1¼
32	4½	18⅞	8	21¾	11½	(sh) 198,770	N.P.	Panhandle P. & R.	.....	.....	700	13	13	12	12⅛	— ⅜
90⅜	51	83	54	106¼	70	$2,935,200	$100	Panhandle P. & R. pfd.	.....	July 2, 23	No sales.					
57⅜	40	60¼	36¼	53⅞	35¼	(sh) 2,406,796	N.P.	Phillips Petroleum	37½eQ	Jan. 2, 29	18,500	44½	44⅞	43½	44⅛	— ⅜
....	....	1⅛	½	5¼	½	$29,622,925	$25	Pierce Oil Corp.	.....	.....	11,200	2⅝	2⅞	2½	2⅝	.....
7	2¼	5½	2½	6⅝	3½	(sh) 2,500,000	N.P.	Pierce Petroleum	.....	.....	7,300	5	5¼	5	5⅛	+ ⅛
								Prairie Oil & Gas Co.			27,900	....	62¼	59½	60⅝	— 1⅜
20¾	11	33⅞	16¾	28⅞	16	$37,450,850	$50	Producers & Refiners	.....	Sept. 15, 23	1,900	....	23	22⅛	22½	— 1⅛
41¾	30¾	50	36⅞	49⅝	41	2,845,350	50	Producers & Refiners pfd.	.....	May 1, 25	70	43	43	43	43	.....
31	25¼	33½	25	31¼	19	75,959,350	25	Pure Oil Co.	25cQ	Dec. 1, 28	19,200	27	26⅞	26¼	26⅝	— ⅛
27½	22	28⅝	25¾	56	23½	47,025,000	$25	Richfield Oil	.....	Nov. 15, 28	1,980	45½	45½	44⅛	46½	+ 1
57⅜	47⅜	54½	44¼	63⅜	44⅝	(sh) 611,303	13.40	Royal Dutch, N. Y. shares	50eQ	Jan. 10, 29	3,100	53¾	53¾	53	53¾	+ ¼
48⅝	40½	47⅞	41⅜	57½	40⅝	(sh)£30,000,000	£1	Shell Transport & T.	$1.455	July 23, 28						
31	24	31¾	24⅝	39¼	23¼	(sh)20,000,000	N.P.	Shell Union Oil	35cQ	Dec. 31, 28	31,900	28¾	28⅝	27⅞	28⅛	— ¼
28⅝	15½	26⅜	14¼	27¼	18⅛	$8,357,000	$10	Simms Petroleum	10eQ	Dec. 15, 28	13,100	22¼	23½	21¾	23½	+ 1¼
24⅞	16¾	22⅜	15	46¼	17⅜	(sh) 4,501,915	N.P.	Sinclair Consolidated	.....	.....	209,000	41½	42	39⅝	42	+ ½
93½	90	104½	97	110	102½	$16,604,600	$100	Sinclair Consolidated pfd.	82Q	Nov. 15, 28	No sales.					
37⅛	26⅝	37⅜	24⅛	42⅝	25	27,396,590	25	Skelly Oil Co.	50eQ	Dec. 15, 28	11,900	35	36⅛	34⅛	35	— ¼
63⅝	51½	60¾	50⅜	80	53	(sh)12,594,098	N.P.	Standard Oil of California	65½eQ	Dec. 15, 28	23,900	71½	72¾	70⅛	71⅝	— ⅛
46⅜	37½	41⅜	35⅛	59⅜	37⅜	$611,120,700	$25	Standard Oil of New Jersey	‡25cQ	Dec. 15, 28	71,900	53⅜	54⅜	53	54	+ ⅜
47¼	30⅜	34⅛	29¾	42⅛	28¾	427,973,275	25	Standard Oil of New York	40eQ	Dec. 15, 28	699,800	41⅜	44¼	40⅝	43⅞	+ 3¼
41⅝	30⅛	34⅞	30	77	31½	(sh) 1,206,073	N.P.	Sun Oil	25cQ	Dec. 15, 28	700	65½	66¼	66	66	+ 1
5¼	1	6½	3⅛	14¼	2½	(sh) 1,267,000	N.P.	Superior Oil Corp.	....	Dec. 20, 20	4,500	10¾	38⅜	35½	35½	— 3⅜
58	48	58	45	74⅜	50	$211,076,650	$25	The Texas Corporation	75eQ	Jan. 1, 29	49,800	64⅞	66¼	64⅝	66	+ 1
19½	12	18⅞	12	26⅝	12½	8,380,340	10	Texas Pacific Coal & Oil	.....	Jan. 3, 28	21,900	18½	18⅜	17⅜	17⅝	— ⅞
39¼	27	29⅛	19	39	19⅝	(sh) 2,168,410	N.P.	Tide Water Oil Co.	20eQ	Dec. 15, 28	2,800	37⅞	37⅜	36	37	— ⅝
103	87¼	90⅛	85	100⅛	86	$20,705,200	$100	Tide Water Oil Co. 5% pfd.	$1 25Q	Nov. 15, 28	400	96⅝	96⅜	96⅝	96⅜	+ ⅛
27	20⅞	19¼	15⅜	25	14⅜	(sh) 4,796,158	N.P.	Tide Water Associated	.....	Aug. 1, 27	26,400	21⅝	21⅞	20⅝	20⅜	— ⅜
5½	3	10⅜	3¾	14⅜	7¼	(sh) 3,742,029	N.P.	Transcontinental Oil	.....	.....	49,600	11⅝	12⅜	11⅜	12	+ ½
58⅜	37¼	56½	39⅝	58	42⅜	$94,798,100	$25	Union Oil of California	50eQ	Nov. 10, 28	1,600	52¼	52⅝	50¼	51½	+ ¾
120⅜	84¼	127½	94	128¼	116⅜	31,061,200	100	Union Tank Car Co.	$1.25Q	Dec. 1, 28	400	124	124	124	124	— ½
30¼	23½	34½	24½	44⅞	26	(sh) 356,000	N.P.	Warner Quinlan	50eQ	Jan. 2, 29	5,600	....	40¾	39	39¼	— 1⅜
29¾	25⅛	27½	20	38	20⅛	(sh) 490,000	N.P.	White Eagle Oil & Refining	50eQ	Jan. 20, 29	5,600	....	86⅜	85¼	85⅝	— ⅝
								Wilcox Oil & Gas			600	....	20½	19	19	— 1½

*Odd lots. ‡Also extras.

STANDARD OIL STOCKS ON NEW YORK CURB

21	16	21⅝	17⅞	22¾	16⅜	£4,126,460	£1	Anglo-American Oil		June 6, 28	8,100	16⅝	17⅝	14⅞	15½	— 2
....	....	3¾	¾	5	1¼	(sh) 500,000	N.P.	Atlantic Lobos	.....	.....	100	2¾	2¾	2¾	2¾	— ⅛
76	65	69	50	56	45½	1,000,000	25	Borne Scrymser	$18.A.	Oct. 15, 28	No sales.					
59½	42	60	45	76	53	10,000,000	50	Buckeye Pipe Line	$1Q	Dec. 15, 28	200	66⅞	66⅞	66¼	66¼	+ ⅛
82½	65	126	76½	161	117¼	3,000,000	25	Chesebrough Mfg.	$1Q	Dec. 28, 28	No sales.					
25⅞	17½	22⅝	16¼	23	16	36,057,840	10	Continental Oil	.....	Dec. 15, 27	15,200	19⅜	19⅝	19⅛	19¼	— ¼
137	102	137	89	114	67	1,500,000	50	Cumberland Pipe Line	$1A	Dec. 15, 28	No sales.					
63¾	43	68½	47	88	64⅛	5,000,000	100	Eureka Pipe Line	$1Q	Nov. 1, 28	50	67	67	67	67	— 1
32½	9⅞	13½	3½	12	5	16,000,000	100	Galena Signal Oil	.....	June 30, 25	No sales.					
68¼	52	68½	54	114¼	60	73,117,577	25	Humble Oil & Refining	30eQ*	Jan. 1, 29	19,200	100	100⅞	98	99¼	+ ¼
144½	125½	182	123¾	290½	176½	20,000,000	100	Illinois Pipe Line	10%S.A.	Dec. 15, 28	150	270	275	270	275	+ 1
....	....	64¾	37¾	104	56¾	(sh) 6,458,267	N.P.	Imperial of Canada	25cQ	Dec. 1, 28	6,700	89	97	89½	96	+ 7
72½	58	94½	61	92¾	74⅞	$5,000,000	$50	Indiana Pipe Line	$1Q	Feb. 15, 29	100	82⅞	82⅞	82⅞	82⅞	+ ⅛
35½	28⅜	39	28¼	55	35	(sh) 7,123,444	N.P.	International Petroleum	25c	Nov. 30, 28	34,100	46¾	50¾	46½	50	+ 3
20⅜	12½	24	13½	32⅜	20⅛	$6,363,350	12.50	National Transit Co.	25c	Dec. 15, 28	1,100	22	21⅜	21½	22	.....
51⅛	27¼	44½	31¼	75	37½	5,000,000	100	New York Transit	.....	July 15, 26	No sales.					
80½	64	100	70	125	62	2,000,000	50	Northern Pipe Line	$38.A.	Jan. 2, 29	No sales.					
67¾	55¾	67⅞	52	83½	58	60,000,000	25	Ohio Oil Co.	50cQ*	Dec. 15, 28	800	74¼	74½	72⅛	72¼	— 1¾
24¾	15	39	12	44	29	10,000,000	25	Penn Mex. Fuel	$1.25	Dec. 15, 28	8,600	32	46¼	32	41	+11
137½	122½	190	132	278	172	81,000,000	100	Prairie Pipe Line	$3.50	Oct. 31, 28	3,500	53	53½	52	52¼	— 1⅛
60¼	48	55½	45⅝	68	46	60,000,000	25	Prairie Oil & Gas	.....	Aug. 31, 27	No sales.					
220	84½	201½	175½	220	167	4,000,000	100	Solar Refining	$58.A.	Dec. 20, 28	No sales.					
74½	61½	27¼	15½	35⅞	12	1,000,000	10	Southern Pipe Line	$2	Dec. 1, 27	600	....	15⅛	15	15	— ⅞
50	34½	41½	35	69	36¾	2,000,000	25	South Penn Oil	50cQ	Dec. 31, 28	2,600	66½	67⅜	66	66	— ½
56	47½	83	55½	100	70	3,500,000	100	Southwest Pa. Pipe Lines	$1Q	Oct. 1, 28	500	....	15⅛	15	15	.....
70½	60½	81¼	64⅝	95⅞	70⅞	228,415,463	25	Standard Oil of Indiana	62½eQ	Dec. 15, 28	16,100	90¼	90⅜	87⅝	90	.....
36½	16½	20⅞	14⅝	27¾	15	8,000,000	25	Standard Oil of Kansas	.....	June 16, 24	400	21	21¼	20⅞	20⅞	— ⅛
134⅜	108	130	111½	179¾	122¼	17,012,559	25	Standard Oil of Kentucky	$1Q	Dec. 31, 28	4,400	164⅞	165	163	163¾	— 1
51⅜	42	49½	40	54⅝	39⅞	4,559,850	25	Standard Oil of Nebraska	63cQ	Dec. 20, 28	300	....	49⅜	47¼	47¼	— 1¾
372	288	87½	72	134	71	14,000,000	25	Standard Oil of Ohio	62½eQ	Jan. 2, 29	100	119	118¾	117½	118¾	+ ½
21	15	21	14½	26	16	861,000	25	Swan Finch Co.	.....	Nov. 1, 19	100	18¾	18¾	18¾	18¾	.. ..
109⅜	90¼	....	....	101¼	72¼	125,619,000	25	Vacuum Oil	75eQ	Dec. 20, 28	22,700	96⅜	109¾	96	109¾	+14

*Also extras.

paid by South Penn Oil Co. in January, subject to stockholders' approval of the necessary capital increase. This will increase from 800,000 to 1,200,000 the number of shares outstanding.

Solar Refining Co. stockholders at their annual meeting January 9 will vote on a plan to increase the company's authorized capital from 40,000 shares of $100 par to 160,000 shares of $25 par.

In the Standard pipe line group, a number of capital readjustments were made during 1928, all involving reductions in authorized capital, effected through the payment of special cash dividends. These changes were as follows:

Cumberland Pipe Line Co., reduced capital from $3,000,000 of $100 par to $1,500,000 of $50 par.

Northern Pipe Line Co., reduced capital from $4,000,000 of $100 par to $2,000,000 of $50 par.

Southern Pipe Line Co., reduced capital from $5,000,000 of $50 par to $1,000,000 of $10 par.

Southwest Pennsylvania Pipe Lines, reduced capital from $3,500,00 of $100 par to $1,750,000 of $50 par.

All of these changes were due to the declining business of the pipe lines, and the decision of directors that carrying of large cash surpluses was unnecessary in view of the fact that no expansion of the companies' scope of operations appeared possible.

Shell Union

Consolidated statement of Shell Union Oil Corp. and subsidiaries, as of June 30, 1928, submitted to New York Stock Exchange, shows total assets of $464,271,720, compared with $456,813,483 on December 31, 1927, and surplus $29,542,460, against $30,628,357. Current assets were

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ROCKY MOUNTAIN AREA

(Continued from Page 122)

bottomed at 744 feet and running the 12½-inch casing. The same company's test on Section 35-22-115, Waterfall structure, also is making some progress after being idle several weeks preparing for winter operations. A water well has been completed and the hole, which is bottomed at 1,765 feet, is straightreaming to lower the 12½-inch casing.

In Uinta County, the California Co.'s No. 1 Union Pacific, Section 7-17-116, Muddy Creek Dome, is drilling at 2,239 feet in loose white sand, and same company's No. 1 Wyss, Section 12-32-115, on the South Cottonwood Dome in Sublet County, is drilling at 1,030 feet in light red shale. The California Co.'s No. 1 Bushell, Section 11-29-115, Snyder Basin Dome, is shut down temporarily at 2,410 feet. W. D. Newlon's No. 1, Section 12-26-113, in the La Barge district, is shut down for the winter at 2,157 feet after casing off water with the 6⅝-inch casing. The California Petroleum Co. is not starting any new wells in that area and drilling operations will not be very extensive until spring.

The Prairie Oil & Gas Co.'s No. 1 Tucker, Section 18-13-99, on the Alkali Creek structure in Carbon County, is bottomed at 2,480 feet and preparing to underream.

In Carbon County, the Producers & Refiners Corp.'s No. 1, Section 14-25-89, on the Sherrard Dome, is bottomed at 2,825 feet in dark shale and underreaming at 2,800 feet, and its No. 7, Section 7-26-89, on the Wertz Dome, has recovered the sand pump and is drilling on iron at 3,500 feet. The total depth is 3,502 feet. Same company's No. 7, Section 14-32-95, on the Sand Draw Dome in Fremont County, is rigging up the lubricator. The hole is still bottomed at 2,917 feet where it had a flow of 65,000,000 feet of gas. The 10-inch was cemented at 2,405 feet. A diamond drill is being used on this hole which is a test to the sands below the gas horizon.

Weston County

In Weston County, in the northeastern part of the State, the Teton Oil Co. has commenced spudding in its test on the Fiddler Creek Dome in the SE SE, Section 30-45-64, and the Allen Oil Co. is shut down for the winter at 4,350 feet in its test in NE cor., Section 15-44-64, on the Howard Dome. The 6¼-inch casing collapsed and it was decided to suspend until spring.

The Texas Production Co.'s No. 1, Section 23-45-100, on the Skelton Dome, in Hot Springs County, is bottomed at 525 feet and underreaming at 425 feet, and the Westland Oils, Inc., SW SE, Section 23-44-95, on the Gebo structure, has completed rigging up and is about ready to commence spudding.

In Big Horn County, the Prairie Oil & Gas Co.'s No. 1 Chilcote, Section 35-56-95, on the Little Sheep Mountain structure, is bottomed at 1,475 feet, supposedly in the top of the Deadwood formation and fighting a crooked hole. The test is making some gas and attracting considerable attention as this is the first well to be drilled to the Deadwood in that part of Wyoming. This horizon, which correlates with the Wilcox sand in Oklahoma and the Keenan sand in Pennsylvania, holds out possibilities in the Big Horn Basin that makes the test more than ordinarily interesting. Two other operations in this county which have not made much progress for some time are again in line for interesting developments.

The Utah Southern Oil Co.'s No. 3, Section 29-56-97, on the Garland Dome, which has been standing for some time at 3,763 feet with the hole full of heavy mud to hold back gas pressure from the Embar, is running the 5⅜-inch casing and will cement at 3,317 feet in preparation for pumping out the mud and making a test. The hole also showed oil saturation at 3,384-3,445 feet in the Embar. The other well is the Producers & Refiners Corp.'s No. 3 on the same structure in Section 24-56-98, which has been bottomed at 2,708 feet for some time. It has completed a rotary rig in order to get through the gas horizon, and is about ready to resume drilling. The last named is a joint operation with the Kinney-Coastal Oil Co. The Garland Dome is larger than the Oregon Basin structure, but has never had a satisfactory test of the horizons productive in the last named field.

Park County

In Park County, the Oregon Basin Field had no completions for the week and drilling is at a low ebb. The Producers & Refiners' No. 1, Section 29-52-100, is drilling at 550 feet in sandy shale with the hole full of water, and the Cody Petroleum Co.'s No. 1 Garner, SE, Section 27-51-101, is drilling at 2,915 feet. The Cody Petroleum Co.'s No. 7 Klindt, Section 7-51-100, has commenced spudding with rotary rig. The Enalpac Oil & Gas Co.'s No. 2 Cactus, SE cor., Section 6-51-100, is drilling at 2,400 feet, and the Wyoming Western Oil Co.'s No. 3 Hough, SE SE, Section 18-51-100, is drilling at 3,300 feet. The Wisconsin Holding Co.'s No. 2 Rousch, Section 9-51-100, is drilling at 2,700 feet, and the Big Horn Petroleum Co.'s No. 1 Trumbull, SW NE, Section 7-51-100, is drilling below 3,150 feet. Same company's No. 1 Hoodoo, SE SE, Section 36-51-101, is drilling at 4,488 feet and getting deep. Outside of Oregon Basin, the Lenco Petroleum Co.'s No. 1, Section 25-53-101, on the Shoshone structure near Cody, is drilling at 725 feet, and the California Exploration Co.'s No. 2, Section 14-48-102, on the Pitchfork Dome, is standing cemented at 225 feet. The Producers & Refiners' No. 1, SE NW, Section 7-57-97, Sage Creek, is drilling at 1,335 feet in shale. The 12½-inch was cemented at 1,200 feet.

The Ohio Oil Co.'s well on the Shoshone anticline near Cody, in Park County, in Section 27-53-101, which gave strong indications of opening a new black oil pool, has proven a disappointment. The test topped the Embar sand at 4,752 feet and was showing for a producer. At 4,765 feet it had 3,500 feet of oil standing in the hole, but at 4,780 feet warm water made its appearance, filling the hole to the top. An effort is being made to plug off the bottom water and make a test of the upper part of the sand. It is probable that another hole will be started to test the lower Embar and Tensleep as the discovery well has been reduced to 4¾-inch casing.

Montana

The Hannah Porter well on State land, Section 36-34-2, is holding the interest of oil men in Montana with a production of oil estimated at 100 bbls. and a gas production of 7,000,000 feet daily. The well is shut in after it blew off the control head and injured several members of the crew. Its location, about 4 miles ahead of production in a southeast direction from the Sunburst Field, has jumped prices in land holdings there to unheard-of heights.

Another great surprise was given the oil men in Sunburst Field the past week. The Campbell-Morton No. 2 in Section 13-34-2 came in some days ago and was reported good for 75 bbls. after a test period of production had been made. This well appeared to be a nominal producer and occasioned but little comment in its completion. The Ellis sand was found at 1,402 feet and nothing out of the ordinary was noticed while the sand was being drilled. Last Wednesday the well suddenly started to flow at a great rate and after making a 26-hour test made 1,402 bbls. and is still flowing strong with no indication of letting up.

It is supposed a large pool was close to the hole made by the bit and after a few days the pressure broke through the intervening wall and came out through the well. Now the question before the operators is in what direction the pool lies and wells are being hastily located to determine this matter.

The Marias Zachor No. 6 in Section 20-35-1 in Sunburst Field came in the past week in the Ellis sand and will do 25 bbls. at a depth of 1,545 feet. This well is an offset to the same firm's No. 5 that made 700 bbls. in the lime and the company intends to drill this well to test the lime sand also.

The next well to come in at Sunburst will probably be the Peerless Adams in Section 12-34-1. This well is an offset to the big producer of the Hibbing Stribling firm which made about 700 bbls. when it came in.

Pondera Field

Pondera Field completed nine new wells and only one may be a dry hole. This is the Texas Pacific's No. 10 on the Hirschberg lease, and while it showed some oil, it also had quite a lot of water and is being tested to see whether it will make a commercial producer. It is in Section 14-27-4.

The Continental Development Co. has a well that started off better than 200 bbls. This is on the Jones lease in Section 9-27-4 in the northwest part of the field. The Fulton Petroleum Co. in Section 9-27-4, the same section as the Continental's well, has a producer good for 150 bbls. Rice Burke Oil Co. in Section 15-27-4 has a producer good for 100 bbls.

The Continental Development Co. on the Wheeler lease, Section 14-27-4, brought in a well good for 80 bbls. The Rice Burke has a producer in Section 15-27-4 of about 80 bbls. on the Pondera Valley bank lease. The Ponting Rice No. 3 in Section 15-27-4 is good for 40 bbls. The Midwest Refining Co. in Section 10-27-4 is good for 50 bbls. and the Texas Production Co.'s No. 8 on the Kingsbury lease is good for 50 bbls. This last well is in Section 15-27-4.

There are 14 more wells drilling in Pondera and several more completions are looked for in the coming week. After the present drilling wells are in the sand a let-up is expected until spring. The necessary work of keeping the water supply lines open prevents the economical operation of the leases.

The Fifty-Six Petroleum Co. sold the Richard Ihde tract in the Cat Creek Field, one of the best properties of that area in the early history of the Cat Creek development, the past week. The Book interests of Detroit, under the name of the Century Petroleum Co., is reported to be the purchaser and the price is credited to be $250,000. The Ihde lease in Cat Creek has produced about $3,000,000 worth of crude since it was first drilled.

ROCKY MOUNTAIN PRODUCTION
Daily Average Runs Week Ended December 29

WYOMING	
Salt Creek	31,430
Big Muddy	2,510
Grass Creek	2,170
Elk Basin	800
Frannie	290
Ferris	20
Rock River	2,360
Lance Creek	360
La Barge	2,900
Poison Spider	770
Oregon Basin	3,630
Osage	450
Mule Creek	....
Lander	430
Byron	30
Lost Soldier	3,660
Simpson Ridge	70
Dutton Creek	50
Rex Lake	150
Hamilton Dome	720
Greybull	....
Total Wyoming	52,800
MONTANA	
Cat Creek	1,560
Lake Basin	70
Kevin-Sunburst	7,090
Pondera	2,220
Total Montana	10,940
COLORADO	
Florence	976
Moffat	1,021
Fort Collins	2,289
Iles Dome	1,719
Rangely	100
Tow Creek	632
Boulder	25
Walden	....
Total Colorado	6,762
NEW MEXICO	
Rattlesnake	1,367
Hogback	500
Artesia	1,065
Cap Rock	119
Table Mesa	118
Total New Mexico	3,169
Total Rocky Mountain	73,671

GREATER FLEXIBILITY FOR NEW TYPE FILTER

(Continued from Page 128)

western Engineering Corp. wherein these points have been studied. In discussing filtering Mr. Cannon says "there are several factors which largely govern the design and operation of any filter for a specific purpose. These factors are the thickness of pre-coat required (if pre-coating is necessary); the percentage of solids in the liquid to be filtered; the flow rate as measured in gallons or barrels per square foot per unit of time; the porosity of the cake; the uniformity of this cake (or uniformity of pre-coat), the ease of dropping this cake to clean the filter and the desirability of washing this cake in place before dropping.

"In the filtration of certain products it has been found that the first filtrate through the filter is nearly always turbid and remains turbid until a certain amount of solid matter has been deposited on the cloth. This deposit or cake clarifies the additional liquid as it passes through, hence the art of 'pre-coating' has been resorted to. In most cases the 'pre-coating' also makes the cake easier to remove from the filter. This pre-coat material may be any material which has a high enough porosity to admit of a free flow of the filtrate, but in which the interstices are small enough to prevent the passage of any of the solid particles. If this pre-coat material is deposited uniformly over the entire filtration surface a more uniform flow rate will be obtained.

"In all filters the removal of the cake deposited in the filter presents a serious problem. In certain filters the time required for the removal of this cake prohibits the use of this type of filter in work where the filtration cycle is short. In all filters using cloth as a filtering medium, the ease with which these cloths can be replaced, as necessary, is a material factor. We have designed and are constructing an entirely new type of filter which we believe has the following advantages:

"The design may be readily changed to admit of either thin or thick pre-coats or cakes.

"An absolutely uniform pre-coat can be built up with the filter.

"The cake can be readily discharged from the filter with a minimum of manual operation.

"The cake can be discharged either wet or dry as desired.

"New cloths can be installed in the filter in a minimum of time.

"High flow rates can be maintained throughout the entire filter cycle.

"Low cost of construction.

Description of Process

"The accompanying sketch shows in a general way the design of this filter. (1) is a cylindrical shell of sufficient strength to withstand any pressure necessary to force the filtrate to storage for further processing. (2) is a cylindrical filter element of sufficient diameter and length to give the necessary surface and the necessary thickness of cake for any particular work. The diameter, length and number of these elements in one shell can be readily changed to meet any given problem. These elements are fastened to what corresponds to tube sheets at points (3). The heads (4) are built with latch bolts and hinged, and are thus easily removed for the installation of new cloths (5), which are ingeniously and readily secured in the elements at points (6). As the inlet nozzle (7) is not touched during the change of cloths, a minimum amount of labor is required. (8) is the dumping mechanism where, by merely turning a valve wheel, closure (9) is dropped entirely out of the way. By admitting air alternately through nozzles (10) and (11) the cloth can be vibrated rapidly to entirely remove any cake from the filter. As the filter stands in a vertical position, this cake must drop out through the opening left at (9). Oil is fed directly to the pre-coat tank where it is contracted or mixed with clay fed into this tank by a continuous clay feeder. Suction is taken from this tank through a centrifugal pump which discharges into the top of the filter. As the clay travels downward through the inside of the filter element, the clay is retained on the inside of the filter element, the effluent oil passing through the element and out as shown.

"We found that if a comparatively small amount of the slurry of gasoline and clay is returned from the bottom of the filter to the pre-coat tank, thus giving the clay a longer time to contact with the oil, that materially smaller quantities of clay can be used to obtain equivalent results of other filtration operations As for example, at one plant where

1½ pounds of clay per barrel of oil were being used, by this method of operation, with this filter, the quantity of clay used was cut to approximately .6 pound per barrel."

USE SEVERAL METHODS IN TREATING GASOLINE

(Continued from Page 130)

of the tank containing the solution and the solution circulated over and over again by means of a pump until the solution fails to produce sweet gasoline.

In some instances the chlorine is introduced into the gasoline and the caustic solution circulated by the "jetting" action of the gasoline as it passes into the tank.

Sometimes the gasoline containing chlorine in physical solution is bubbled through the caustic solution. Chlorine is readily soluble in gasoline, and affords a ready means of carrying the chlorine to the zone of reaction. However, chlorine reacts with the paraffin hydrocarbons to a limited extent even in the dark with the result that the treated gasoline contains chlorhydrocarbons. The chlorine caustic soda process is yet in the experimental stage, and unless gasoline can be treated with this modification, so as to exclude the presence of combined chlorine in the treated product, it is highly probable that future specifications for treated gasoline will prevent its usage.

Sodium Plumbite Process

It is desired in order to avoid confusion, to call atention to the difference between the term "sulphur" as commonly expressed, and elementary sulphur in gasoline. The term "sulphur in gasoline" as ordinarily used, refers to certain types of decomposable compounds of sulphur. When pure sulphur or elementary sulphur is used in treatment of gasoline, the gasoline dissolves the sulphur as such, similar to the manner in which water dissolves table salt. If a water salt solution is evaporated, the water will pass as a vapor, leaving the salt behind as a solid. Elementary sulphur can be dissolved in gasoline, and then to certain extent separated from it in the same way that the salt was separated from the water solution, but the decomposable sulphur compounds pass off as a vapor with the gasoline.

The sodium plumbite solution alone, merely dissolves the decomposable sulphur compounds from the gasoline as proved by the fact that a fresh sodium plumbite solution will sweeten the gasoline.

It is then necessary to add sulphur, in order to precipitate the sulphur compounds extracted from the gasoline and thereby regenerate the caustic. The reaction seems to take place between the elementary sulphur the decomposable sulphur compounds and the litharge, the sodium hydroxide merely acting as a solvent, and making possible a more and efficient treating method. It is recognized, in refinery practice that if the litharge is dissolved in the caustic before it is blown into the agitator, the treating solution acts more readily.

Scores of tests have shown that it is necessary to have some sulphur present when treating with sodium plumbite. An additional proof of this fact is that raw casinghead gasoline will not respond to the doctor test unless sulphur is added.

Sulphur is soluble in gasoline, and, as in the case with practically all solutions composed of liquid solvents and solid solutes, the amount of sulphur which will be dissolved by the gasoline depends to a great extent upon the temperature, the higher temperature causing more of the sulphur to go into solution than does the lower temperature. When gasoline has been saturated with the sulphur and the solution is then allowed to cool, the excess of sulphur over that required to saturate the gasoline at the lower temperature will precipitate from the solution. This phenomenon is evidenced by the gasoline sulphur solution changing from a perfectly water white solution to a milky white appearance. Given time, this excess sulphur will gradually settle from the gasoline, leaving water white.

No trouble of this kind, due to excess of sulphur, was experienced at the start, in plant practice. When special precautions were taken to have an excess of sulphur in laboratory treating tests, this phenomenon, experienced first in plant practice, was reproduced by laboratory tests.

In addition, tests were made in which refinery gasoline, refinery naphtha, and raw casinghead gasoline were each shaken for about 10 minutes with an excess of sulphur, the temperature of the solvents being about 90 degrees Fahrenheit. When the solution was cooled to about 40 degrees they had changed from water white to a deep milky white appearance, so that it was impossible to determine their colors by the Saybolt chrometer. They would have been classified as less than a –9 color. This finely divided sulphur settled out of the solutions, leaving them water white.

CRUDE PRODUCTION LESS IN NOVEMBER

(Continued from Page 38)

compared with 332 refineries operating at 82 per cent of their recorded capacity in October.

Exports

American exports of petroleum and refined products for the 11 months ending with November as announced by the Department of Commerce today follow: Crude petroleum exports amounted to 17,432,394 bbls., valued at $24,680,811 against 14,126,098 bbls., valued at $22,-987,691 in the corresponding period of 1927.

Exports of refined petroleum totaled 117,233,861 bbls., valued at $431,595,669 against 106,948,900 bbls., valued at $399,736,334, in the corresponding period of 1927. Exports of gasoline, naphtha and other light products amounted to 48,081,727 bbls., valued at $214,723,-491 against 40,307,432 bbls., valued at $196,354,333 in the corresponding period of 1927. Exports of illuminating oils totaled 20,623,204 bbls., valued at $87,-897,888, against 18,108,731 bbls. valued at $74,047,419 in the corresponding period of 1927.

Gas and fuel oil exports amounted to 38,387,327 bbls., valued at $42,321,614, against 39,560,548 bbls., valued at $46,-002,905 in the corresponding period of 1927.

Lubricating oils were exported to the amount of 9,982,955 bbls., valued at $84,-732,303, against 8,836,643 bbls. valued at $81,577,253 in the corresponding period of 1927.

Other refined petroleum was exported amounting to 158,648 bbls., valued at $1,920,345, against 134,745 bbls., valued at $1,754,424 in the correspondig period of 1927. Exports of paraffin wax totaled 366,048,327 pounds, valued at $15,-473,979, against 309,754,077 pounds, valued at $13,805,918 in the corresponding period of 1927.

OIL SECURITIES HAD RATHER QUIET WEEK

(Continued from Page 137)

$71,977,054 and current liabilities $15,-523,455 as contrasted with $91,096,153 and $18,235,122, respectively, at end of 1927.

Consolidated balance sheet of Shell Union Oil Corp. and subsidiaries, as of June 30, 1928, compares as follows:

	June 30 1928	Dec. 30, 1927
Assets		
Prop., plant, eqpt.	$385,622,882	$358,825,101
*Crude oil	24,344,890	24,393,420
Materials and sup...	7,056,845	6,450,052
Cash	1,726,059	3,264,242
Demand loans, etc..	24,851,710	46,384,566
Accts. receivable	13,161,568	10,153,405
Notes receivable	835,983	450,468
Advances	677,598	987,089
Deferred charges	5,994,185	5,905,140
Total	$464,271,720	$456,813,483
Liabilities		
†Common stock	$201,412,821	$201,412,821
Pur. mon oblig.	323,837	1,721,207
Funded debt	49,140,500	49,745,000
Sub. co bonds	29,914,000	30,000,000
Accts. payable	10,214,080	13,710,972
Minority interest	1,368,313	1,386,704
Sundry accruals	2,504,945	1,556,360
Tax res.	2,804,429	2,967,790
Deprec. res.	122,046,334	108,684,272
Special res.	15,000,000	15,000,000
Surplus	29,542,461	30,628,357
Total	$464,271,720	$456,813,483

*Crude oil, semirefined and refined products inventories. †Represented by 10,000,-000 no-par shares.

Holmes Denies Merger

R. C. Holmes, president of The Texas Corporation, says: "Rumors current that The Texas Corporation has been negotiating for or contemplates a consolidation with Marland Oil Co. are hereby denied."

The Street has been hearing talk of a possible grouping of the two companies for some weeks past, possibly due to recent election D. J. Moran, vice president of The Texas Corporation, as president of Marland Oil Co. Mr. Holmes' denial of such a step even being contemplated is printed in the current number of the company's official organ, "The Texaco Star."

Anglo-American

Anglo-American Oil Co., Ltd., has decided not to declare interim dividend for 1928 owing to continued depression in the petroleum industry.

PANHANDLE FIELDS

(Continued from Page 39)

at 2,724-70 feet. Its No. 27 Hendricks T-88-M, located in Section 33, Block 26, had an initial production of 1,736 bbls. at 2,880 feet.

Brown County

Aerey Brothers' No. 1 Gaines was dry and abandoned at a total depth of 1,553 feet. Clark Buffalo Oil Co.'s No. 1 Weldon was dry and abandoned at 1,740 feet. Humble Oil & Refining Co.'s No. 27 Hickman made 14 bbls. at 1,206-38 feet. Amerada Petro'eum Corp.'s No. 1 Guthrie was dry and abandoned at 742 feet.

Callahan County

Empire Gas & Fuel Co.'s No. 1 Sealey was dry and abandoned at 4,174 feet. Grass Roots Oil Co.'s No. 6 Klutts made 20 bbls. at 468-74 feet. Prairie Oil & Gas Co.'s No. 2 Sawyer made 5 bbls. at 1,682-1,701 feet. True & Dees' No. 1 McLender was dry and abandoned at 800 feet.

Comanche County

Davis and others' No. 1 Perry was drilled to a total depth of 2,928 feet, was shot with 40 quarts at 2,760-97 feet and with 30 quarts at 2,899-2,930 feet and made 25 bbls.

Coleman County

Lyles and others' No. 1 Manning was dry and abandoned at 3,101 feet. States Oil Corp.'s No. 2 Morris made 5,000,000 feet of gas at 1,667-82 feet. Continental Oil Co. and others' No. 2 Hinds encountered a hole full of water at 2,272-80 feet and was dry and abandoned. Its No. 10 Overall made 33 bbls. at 2,127-33 feet. Dunegan & McCrady's No. 4 Rice was dry and abandoned at 1,155 feet. Foster Oil Co.'s No. 1 Overall was dry and abandoned at 2,401 feet. McClung & Hickey's No. 1 Standbridge was dry and abandoned at 2,350 feet. Toombs & Eppler's No. 1 Chandler was dry and abandoned at 2,478 feet.

Eastland County

Davis and others' No. 1 Horn was drilled to a total depth of 1,604 feet, plugged back to 1,602 feet, was shot with 20 quarts at 1,590-1,600 feet with no results; was shot again with 40 quarts at 1,288-1,300 feet and plugged. Goodwin and others' No. 2 Parker was shot with 80 quarts at 1,482-511 feet and made 28 bbls. Gordon and others' No. 1 McHenson was dry and abandoned at 3,380 feet. Hamon Junior's No. 1 Hartwick had a hole full of water at 1,250-52 feet and was dry and abandoned.

Palo Pinto County

Texas-Pacific Coal & Oil Co.'s No. 158 Stuart was shot with 20 quarts at 1,590-620 feet after having been drilled to a total depth of 1,636 feet and made 50 bbls.

Shackelford County

Earl & Dull's No. 2 Matthews made 580 bbls. at 1,140-52 feet. Marland Oil Co.'s No. 1 Flippen was dry and abandoned at 930 feet. Petroleum Production Co.'s No. 1 Davis was shot with 40 quarts at 1,620-25 feet and made 60 bbls. Roeser & Pendleton's No. 29-A-61 Cook made 100 bbls. at 1,342-67 feet. Their No. 4-A-83 Cook made 110 bbls. at 1,370-81 feet. Their No. 8-B-61 Cook made 90 bbls. at 1,334-47 feet. Tannehill Oil Co.'s No. 10-58 Matthews made 25 bbls. at 987-98 feet.

Stephens County

Hickok Production & Development Co.'s No. 2 Hamel was drilled to a total depth of 4,611 feet and plugged back to 4,060 feet, shot with 80 quarts at 4,030-60 feet with no results and was shot again with 90 quarts at 3,280-310 feet and had an initial production of 200,600 feet of gas. Texas & Louisiana Power & Light Co.'s No. 1 Tonilson was dry and abandoned at 1,725 feet.

PETROLEUM SECTION OF METALS CONGRESS

LOS ANGELES, Calif. Dec. 31.—Three prominent speakers just have been added to the petroleum sections of the Western Metal Congress program, to be held in Los Angeles January 14 to 18.

These speakers are: Jerome Strauss, chief research metallurgist of the Vanadium Corp. of America, New York City; V. T. Malcolm, metallurgist and engineer of the Chapman Valve Co., Indian Orchard, Mass., and Guy A. Barker, manager of the industrial department, Pacific division, Johns Manville, Inc., of the Pacific Coast. They will appear on the same program with Prof. Robert L. Daugherty, professor of mechanical engineering of the California Institute of Technology, of Pasadena, Calif., a program dedicated to oil refinery conditions, and relating to valves and fittings, combat of erosion, and to heat resistance. The program will be given Tuesday morning, January 15.

Three sessions of the convention will be devoted solely to oil field and refinery subjects. In addition to the Tuesday morning program, it is planned that the Tuesday afternoon session be dedicated entirely to discussions of production of oil tools.

The American Petroleum Institute, California division, will have charge of the Wednesday morning session, with A. C. Rubel, of the Union Oil Co. and T. E. Swigart, of the Shell Co., acting as joint chairmen. Casing failures, sucker rod strains and drill pipe failures will be among the topics discussed.

REPUBLIC MOVES OFFICES

After being located at 14 South Main Street, Tulsa, for 14 years, offices of the Republic Supply Co. have been moved to the Mid-Continent Building, and the company's branch store to 303 North Detroit Avenue, Tulsa.

OIL BONDS ON THE NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Members New York Stock Exchange, Kennedy Bldg., Tulsa, Okla.

	Company—	Date	Pct.	Int.	For week ended Dec. 28— Sales	High	Low	Close
11,603,000	American Nat. Gas. Co.	Oct. 1942	6½	A&O	No sales.			
3,000,000	Beacon Oil Co.	Nov. 1936	6	M&N	2,800	112	110⅝	111
18,900,000	Cities Service deb.	Jan. 1966	6	M&N	No sales.			
15,000,000	Cities Serv. refunding deb.	Jan. 1966	5	M&S	3,400	90	89⅜	90
24,843,700	Cities Service Gas Co.	May 1942	5½	M&N	4,600	92¾	92	92⅛
12,000,000	Cities Service Gas P. L. Co.	Jan. 1943	6	J&J	4,400	98⅝	98	98
12,000,000	Continental Oil Co.	Nov. 1937	5¼	M&N	2,100	96	94	94
3,000,000	Dixie Gulf Gas Co. A	Sept. 1937	6½	M&S	5,000	89½	87⅝	88¼
18,000,000	Empire Oil & Ref. Co.	Apr. 1942	5½	A&O	2,300	92	91¼	91½
3,877,100	Galena Signal Oil Co.	Apr. 1930	7	A&O	200	101	101	101
30,904,000	Gulf Oil of Pa.	Dec. 1937	5	J&D	7,200	100½	99⅝	100½
12,000,000	Gulf Oil of Pa. debs.	Feb. 1947	5	F&A	1,400	101	100¾	101
4,000,000	Houston Gulf Gas	Apr. 1943	6	A&O	3,300	93½	92	92
4,000,000	Houston Gulf Gas	Apr. 1943	6½	A&O	1,800	92⅞	92	92
6,339,000	Independent Oil & Gas	Mar. 1939	6	M&S	16,800	114	108½	111
15,000,000	Lone Star Gas Co.	May 1942	6	M&N	No sales.			
14,650,000	Richfield Oil Co.	Sept. 1941	6	M&S	2,200	126	126	126
1,427,000	Richfield Oil Co.	Jan. 1931	5½	J&D	5,000	102¼	101⅞	102
9,733,000	Sun Oil Co.	1939	5½	M&S	3,700	101½	100⅝	100⅝
4,000,000	Transcontinental Oil Co.	Apr. 1930	7	A&O	No sales.			
2,500,000	Warner-Quinlan Oil Co.	1942	6	A&O	No sales.			

Analysis of Distillation Problems

Graphical Method Afford Means of Solving Design of Absorption and Distillation Units in Natural Gasoline Plants

E. G. Ragatz*

In the graphic analysis of distillation relationships as outlined by McCabe & Thiele[1], with its recent amplification in the field of countercurrent absorption systems by Lewis & McAdams[2], we have an analytical method which can be effectively used in solving many of the absorption and distillation problems confronting the natural gasoline industry. As with most graphical methods, this one presents a flexibility and simplicity lacking in the analytical methods usually employed for the solution of distillation problems. At the same time the assumptions upon which it is based are few, and direct, and hold to a remarkable degree in modern absorption plant practice. All in all, it is a tool which the engineers of the industry can ill afford to neglect.

This analysis, as applied to a conventional plate type absorption or distillation column, derives its effectiveness from the following experimentally determined relationships:

1. The layout of such a conventional plate type column can be devoloped from a theoretical unit in which the down flowing reflux comes to complete vapor pressure equilibrium with the ascending vapors on each plate.

2. The ratio of the theoretical number of plates to actual number of plates required to obtain a given result for any one general type of operation will remain

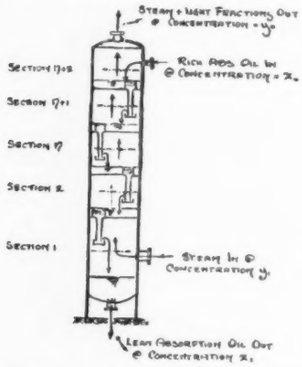


Figure A—A simple plate stripping column.

substantially constant; this constant usually being referred to as the plate efficiency.

In outlining this graphical method we will first discuss the general "assumptions of state" required for its validity, and then develop the simple relationships upon which the analysis itself is based.

Simple Stripping Column

In Figure "A" we have illustrated a conventional plate type of simple stripping column for the graphical analysis of which we must make the following general operating assumptions:

1. The pressure and temperature of the vapor stream flowing through the column must be constant and uniform. This implies that the pressure gradients through the various plates are negligible, and that the latent heat of vaporization of the light fractions, together with any air losses, is compensated for by some heating device other than the stripping steam stream. These assumptions correspond closely to the conditions existing in the exhausting sections of many modern vertical steam stills.

2. The column is fed continuously with a uniform quality of material, and produces a constant quantity and uniform quality of lean bottoms and rich overhead while using a constant quantity of steam of uniform quality. These uniform conditions, of course, are those met with in the operation of any well regulated continuous still.

3. The absorption oil is fed to the still at a temperature corresponding to the aforementioned uniform still temperature.

4. The exchange of light material between the descending liquid absorption oil and the ascending vapor stream occurs only on the column plates.

From the above assumptions, it is obvious that any solute (light fraction)

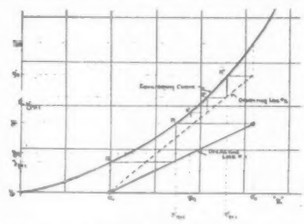


Figure B—Typical design factor curves.

given up by the absorption of oil must be taken up by the steam, and, furthermore, that this exchange must take place at a uniform rate on each plate of the column. Then, calling the concentration of solute in the liquid X, and in the steam Y, and the quantities of absorption oil and steam handled per unit of time, respectively, O and S, we note that between any section n, and the top of the column:

The solute given up by the absorption oil per unit of time $= \triangle X = O (X_o - X_n)$.

The solute taken up by the steam per unit of time $= \triangle Y = S (Y_o - Y_n)$.

Equating the above expressions gives $O (X_o - X_n) = CS (Y_o - Y_n)$.

Where C = some constant.

Important Deductions

Now for this very simple fundamental relationship, we may draw two extremely important deductions:

1. Since this equation was derived simply by equating input against output, it expresses a perfectly general state of

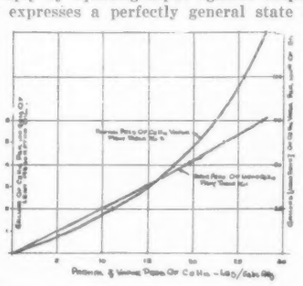


Figure 1—Partial pressure-vapor pressure curves.

affairs, and may be applied to any column operating under the limitations imposed by the above outlined assumptions. Furthermore, it accurately expresses the relationship existing between the solute concentrations in the absorption oil and in the steam at any section above any plate in the column.

2. The concentration of solute in the steam, "Y," is linear in "X," the concentration of solute in the oil. In other words, if we plot values of Y vs. X for various sections through the column, the curve defined by these points will be a straight line.

In the analysis developed by McCabe & Theile a graph is employed, the coordinates of which are X and Y expressed in any convenient terms. On this graph a curve is plotted from the above general equation. This curve (a straight line) is called the operating line, since it interprets the character of operation occurring within the column. In conjunction with this operating line they also utilize a second curve called the equilibrium curve. This second curve indicates, for various solute concentrations, the simultaneous values of X and Y required to develop vapor pressure equilibrium between the solute fraction in the absorption oil and the solute in the stripping steam. A set of these curves is illustrated in figure "B."

Second Operation

Referring to figure "B," let us assume that the column of figure "A" is to operate with a continuous feed of uniform quality X_o, which feed is to be stripped to bottoms quality of X_1, and that the equilibrium curve of figure "B" represents the simultaneous solute concentrations required for the maintenance of pressure equilibrium between the liquid and vapor phases of the solute in question. Then:

1. For any value of X, such as X_o, the corresponding Y equilibrium concentration equals Y_o.

2. With the entering steam assumed to contain zero concentration of solute, the point $X_1 - Y_1$ of the operating line is fixed.

3. Although the X value of the upper end of the operating line is fixed at X_o, its Y value has not yet been defined, and hence a whole series of operating lines similar to lines Nos. 1 and 2 may be drawn.

4. As the slope of these operating lines increases, the operating line values of Y increase for any given value of X, thus indicating an increasing concentration ratio of solute in the steam.

5. Obviously the difference between equilibrium and operating concentrations of Y, such as $Y_a - Y_o$ for the liquid concentration X_o and operating line No. 1, indicates the driving force which transfers the solute from the absorption oil into the stripping steam.

6. Therefore, if the operating line should touch the equilibrium curve, no driving force would be present to change the concentration of solute at this tangent point, and the column would become inoperative in this region.

7. Furthermore, if the operating line should cut over the equilibrium curve, the differential of solute pressure would be reversed, and the solute would tend to migrate from the steam back into the absorption oil. This, of course, is an impossible condition, and hence the "slope of tangency" must be the upper limiting slope of the operating line.

With these observations in mind, let us recall the originally stated rule that the actual column design can be based on a theoretical unit in which complete pressure equilibrium is established at each plate. If that is the case, and operating line No. 1 represents the column operation, then Y_o represents the concentration of solute in the steam leaving the column, and the equilibrium value of "X" for Y_o is the concentration of the liquid on the top plate, this top plate concentration being indicated by $X_o + 1$. Hence we see that "top plate" conditions of equilibrium are expressed by the point M on the equilibrium curve. However, the oil from the top plate, in descending to the plate second from the top, passes through section $n + 1$ where it must be in phase with the vapor stream as indicated by operating line No. 1. This operating line relationship then establishes the value of Y_{n+1} as the concentration of the vapor ascending from the second plate. But these vapors must, in turn, be in equilibrium with the oil on the second plate as again indicated by the equilibrium line.

Hence point N represents the equilibrium status at the second plate. Now from this development of points M and N, it should be obvious that each such point of equilibrium implies the presence of a single theoretical plate, and herein lies the solution of your simpls stripping still problem—the slope of the operating line determines the exit steam concentration of solute, and hence steam consumption rate, while the step-wise construction between the operating line and the equi-

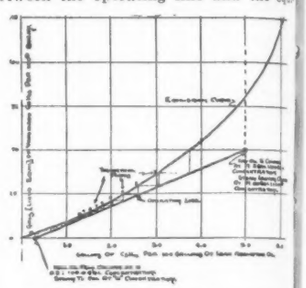


Figure 2—Design factor curves.

librium curve indicates the number of theoretical plates required to effect the desired separation.

Theoretical Plates

For the conditions of operating line No. 1 we see that we would require two theoretical plates. But by inspection we also see that line No. 2 would use less steam and require more plates than line No. 1. Now for the solution of any given still problem, we should first construct several operating lines, calculate the steam rate required for each respective number of plates used, and then plot a curve of "steam consumption" vs. column size vs. steam consumption" from which to make our final decision as to the desirable theoretical column height.

Knowing the plate efficiency of the particular design of column used and its capacity per square foot of gross cross section, we can then lay down the specifi-

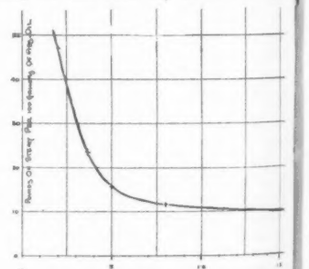


Figure 3—Number of plates vs. steam consumption.

cations required for the actual column construction. In order to illustrate the foregoing general discussions we have worked out a simple problem involving the stripping of a pentane fraction from a typical 42 gravity absorption oil.

1. Given:

(a) Column operating continuously at a uniform rate.

(b) Total absolute pressure on column = 45 pounds.

(c) Temperature of column uniform at 325 degrees Fahrenheit.

(d) Rich absorption oil and steam fed to column at 325 degrees Fahrenheit.

(e) Absorption oil: 40.0 degrees A.

*Paper presented at meeting California Natural Gasoline Association.

[1]McCabe & Thiele, Ind. Eng. Chem. 17, 605 (1925).

[2]Lewis & McAdams, Ind. Eng. Chem. 20, 253 (1928).

P.I.; 6.87 pounds per gallon; 175 mol weight.

(f) Light oil fraction (pentane): 92.4 degrees A.P.I.; 5.27 pounds per gallon; 72 mol weight; 275 pounds vapor pressure at 325 degrees Fahrenheit.

(g) Fat oil contains 5 gallons of C_5H_{12} per 100 gallons of absorption oil.

(h) Lean oil contains 0.3 gallons of C_5H_{12} per 100 gallons of absorption oil.

2. Required: A curve showing the relationship between number of theoretical plates and steam consumption required for reducing the fat oil to a 0.3 concentration.

3. First calculate the data for the "partial pressure-vapor pressure curves" of Figure No. 1.

(a) Data for "vapor pressure vs. fat oil saturation" curve. Make this curve on the basis of the variation in the vapor pressure of C_5H_{12} as its saturation varies from 1 to 6 gallons per 100 gallons of absorption oil, assuming that Raoult's Law is valid.

$$\text{Mols/100 gallons absorption oil} = \frac{100 \times 6.87}{175} = 3.92$$

$$\text{Mols/gal. } C_5H_{12} = \frac{5.27}{72} = .0732$$

Vapor pressure of various C_5H_{12} saturations X.

$$\text{V.P.} = \frac{.0732\ X}{3.92 + .0732\ X} \times 275 = \frac{20.1\ X}{3.92 + .0732\ X} \quad \ldots\ldots(1)$$

Where X = gallons of C_5H_{12} per 100 gallons of lean absorption oil.

Table No. 1

X	20.1 X	.0732 X	V.P.
1.0	20.1	.073	5.0
2.0	40.2	.146	9.9
3.0	60.3	.220	14.7
4.0	80.4	.293	19.1
5.0	100.5	.336	23.4
6.0	120.6	.439	27.7

(b) Data for "partial pressure vs. steam saturation" curve.

Make this curve on a basis of the variation in the partial pressure of C_5H_{12} as the vapor concentration varies to give partial pressures of C_5H_{12} between 5 pounds and 30 pounds per 100 pounds of steam, assuming that the perfect gas laws are valid.

$$\text{Mols/100 pounds steam} = \frac{100}{18} = 5.56$$

$$\text{Mols/gal. } C_5H_{12} = 0.0732$$

Partial pressure of various C_5H_{12} saturations Y.

$$\text{P.P.} = \frac{0.0732\ Y}{5.56 + 0.0732\ Y} \times 45 = \frac{3.29\ Y}{5.56 + 0.0732\ Y} \quad \ldots\ldots(2)$$

Where Y = gallons (liquid equivalent) of C_5H_{12} vapors per 100 pounds steam.

Table No. 2

Y	3.29 Y	0.0732 Y	P.P.
10	32.9	.73	5.2
25	82.3	1.83	11.2
50	164.5	3.65	17.9
75	247.0	5.48	22.4
100	329.0	7.32	25.6
125	412.0	9.14	28.0

4. Draw equilibrium curve of Figure No. 2.

From the data in Tables No. 1 and No. 2 construct the curves shown on Figure No. 1 and then construct the equilibrium curve on Figure No. 2 by plotting equivalent points of equal C_5H_{12} pressure from Figure No. 1.

Note that for this simple case we could have plotted the equilibrium curve directly by equating formulas 1 and 2 and solving for Y, obtaining thereby an equation for the equilibrium curve of $Y = \frac{111.5\ X}{12.0 - 1.23\ X}$.

However, in more complex problems, the two pressure curves of Figure 1 must be constructed for the development of the equilibrium curve, and hence they are included in this simple case as a matter of illustration.

5. Draw various operating lines and obtain data for Figure No. 3.

With the equilibrium curve drawn, and fat and lean oil concentrations fixed, we can draw a series of operating lines similar to the one on Figure 2, and determine the steam rates for various numbers of trays—from these data then plot the curve of Figure No. 3.

For the operating line on Figure No. 2:

(a) Use 2 pounds steam/gallon C_5H_{12} in the vapors.

(b) Remove 5.0 — 0.3 = 4.7 gallons C_5H_{12} per 100 gallons absorption oil.

(c) Steam rate = (2 × 4.7) + 100 = .094 pounds of steam per gallon absorption oil.

(d) Require 16 theoretical plates.

6. Plot the curve of Figure No. 3.

Curve No. 3 indicates that we can use a minimum steam rate in the order of 10 pounds of steam per 100 gallons of absorption oil and still obtain the desired absorption oil leanness. Such a steam rate, however, requires the use of 14 to 16 theoretical plates. Now if we reduce the number of plates to 7 or 8, the steam rate per 100 gallons of oil will only be increased by about 1 pound. In other words a 50 per cent reduction in column height would increase the steam rate only 10 per cent. Obviously, the use of the shorter column would, in most cases, result in a more economical design.

Although the foregoing problem is an extremely simple one, it illustrates a method which is capable of extensive elaboration in the analysis of many rather complicated distillation operations. From our point of view, its real value lies in the possibility it presents of using data from one operation for the prediction of the layout required for an allied, though quite differently detailed, operation.

In all such cases, sufficient data must be obtained from the first operation to define the efficiency of the plates being used, and to permit of drawing the "partial pressure-vapor pressure" curves for the second operation. Once having these preliminary curves established, it is then an easy matter to develop the equilibrium curve of Figure No. 2 and complete the graphical analysis of the problem.

GENERAL DECLINE IN GASOLINE MARKET

(Continued from Page 28)

cost which is under the prices asked for the higher gravity refinery grades of gasoline.

The season of maximum consumption for these high gravity gasolines in the domestic market is here, the demand coming largely from the northern areas where the special grades give better motor performance during the winter months. This competitive situation between blends and high gravity gasolines in the past has tended to narrow the margins between the several grades of refinery gasoline, the higher gravity gasolines losing a part of their premium over the 58-60 U. S. Motor grade.

Export Situation

A substantial decline in export gasoline prices at the Gulf Coast as well as the dullness in the domestic market was a factor in the decline of Oklahoma market. Late last week new prices were announced in the Gulf Coast area. On some grades the new prices were on a parity with the prices being quoted in Oklahoma. Ordinarily the Oklahoma market is from 1½ to 2 cents under the Gulf Coast market for the same grade.

Oklahoma and other Mid-Continent refining areas are in direct competition with the Gulf Coast refiners so far as export business is concerned. In the case of the Oklahoma and Kansas refiners they must absorb a freight charge of 1.45 cents per gallon, the Gulf Coast refiners having that advantage. In addition the Mid-Continent price must absorb the broker profit, evaporation loss, storage cost and other small charges incidental to the handling of large quantities of gasoline for export movement.

If the present high rate of refinery operation is maintained in Oklahoma and other refinery areas it is apparent that some of the gasoline must be sold to exporters as the seasonal dullness in the domestic market will continue during the next three months. If the Gulf Coast refiners are desirous of obtaining all of this export business as was indicated by their action last week, then it is apparent that a serious competitive situation may be developed which will bring about still greater declines in refinery gasolines, particularly the higher gravity grades suitable for export. In this connection it is reported that some contracts have been made by North Texas refiners based on a 2-cent differential under the Gulf Coast market.

Weighted Average Prices

The Monday market in Oklahoma on which The Oil and Gas Journal's weekly market is based was inactive. No sales were reported in the 60-62 437, 60-62 400 and the 64-66 375 grades. There were only a few sales in the U. S. Motor grade and these came largely from one refiner who was still quoting 8½ cents to the trade. For this reason the average price of 8.33 cents is exceptionally high when compared to the 8-cent market established by a majority of the larger refiners on Monday.

Kerosenes and Distillates

Several refiners have reduced their prices on the 41-43 grades of kerosene during the past 10 days. Lower priced material from other Oklahoma refiners and outside refiners quoting on a basis of Group 3 is given in explanation of these declines. The price range to the trade on Monday for the 41-43 grade was 5⅜ to 5¾ cents. Small quantities of export material, some of which was under 41 gravity, was purchased in Oklahoma and Kansas during the week at 5 cents. Very little of the 42-43 grade is refined in Oklahoma and this market was stronger than the principal domestic grades.

The distillate demand was strong enough to bring about an additional one-eighth cent advance at a majority of the refiners. Distillates for furnace oil are now sold on specifications just as much as refinery gasolines and there is a wide variation in prices. Many of the jobbers insist on a product with a flash around 175, zero cold test, sweet odor and good color. The quantity of this grade material is not large in any refining area and this class of buyers are paying as high as 4 cents a gallon in Oklahoma for a 38-40 gravity product.

Other material of the same gravity grade not meeting all the specifications mentioned is being sold at 3½ to 3¾ cents. Sales of lower gravity off specification material as low as 3 cents are reported.

Natural Gasolines

The lack of spot business explains the decline in the natural gasoline market. The large buyers in the coastal areas who made monthly purchases during the summer and fall months either did not buy any natural gasoline during December or their purchases were only a small part of the previous monthly total.

Grade A held to a price of 8 cents during the week. This low gravity product is in demand by both jobbers and refiners who use it with very little refinery gasoline in the manufacture of high gravity gasolines suitable for the winter domestic and export trade.

Grade AA however dropped from 7⅜ to 6½ cents in a few days due to a continued dullness in the demand. The BB and C grades did not decline as much as the AA but both grades were weak at 6 cents on Tuesday.

Fuel Oils and Gas Oils

Gas oils were advanced one-eighth cent during the week. The situation which has been explained in these columns in recent weeks continues. The gas oil market is being affected favorably by its uses as fuel and as charging stock for cracking units.

Some improvement in the demand for the lower gravity fuel oils is reported but prices have as yet not advanced in Oklahoma.

WEST TEXAS FIELDS

(Continued from Page 40)

of Section 75, Block 25, H.&T.C.RR. Survey, was dry and abandoned at 4,290 feet.

Wilbarger County

Baker and others' No. 10 Waggoner-B swabbed 175 bbls. at 1,873-93 feet. Consolidated Oil Co.'s No. 1 Hauser was dry and abandoned at 2,507 feet. Fain-McGaha Oil Corp.'s No. 22 Waggoner-S made 200 bbls. at 2,291-2,302 feet. Its No. 1 Waggoner-V was dry and abandoned at 2,505 feet. Lawson's No. 12 Waggoner-B was shot with 20 quarts at 1,852-68 feet, was plugged back to 1,874 feet and had an initial production of 5 bbls. of oil and 50 bbls. of water. Phillips Petroleum Corp.'s No. 5 Dorothy Waggoner was shot with 5 and 10 quarts at 1,876-1,905 feet and made 8 bbls. Its No. 5 Waggoner-OO made 12 bbls. at 1,882-1,905 feet and was drilled to a total depth of 1,907 feet. The Texas Company's No. 9 Waggoner-B made 90 bbls. at 2,421-35 feet and was drilled to a total depth of 2,443 feet. Waggoner Refining Co.'s No. 12 Waggoner made 210 bbls. at 2,425-32 feet.

WINKLER COUNTY
Week Ended December 25
Hendricks Pool

Company, farm, section and block—	Wells	Prod.
Amerada Pet. Co.:		
Cowden, 3, B-12	2	401
Atlantic O. P. Co.:		
Hendricks-A, 34, B-5	8	1,321
Hendricks-B, 44, 26	3	531
Hendricks-D, 29, B-5	8	2,318
Hendricks-E, 41, B-5	4	2,253
Hendricks-G, 40, 26	7	2,584
Hendricks-H, 30, B-5	1	58
Atlantic & Collett:		
Hendricks-F, 40, 26	12	6,044
Bankers Prod. Co.:		
Hendricks, 30, B-5	1	174
California Co.:		
Hendricks, 29, B-5	8	1,329
Cranfill & Reynolds:		
Hendricks-A, 28, B-5	2	368
Hendricks-B, 35, B-5	1	104
Hendricks-C, 33, 26	2	524
Hendricks-D, 33, 26	1	off
Hendricks-E, 33, 26	2	619
Eastland Oil Co.:		
Hendricks, 33, B-5	2	409
Hendricks-B, 35, B-5	1	109
Gulf Prod. Co.:		
Hendricks-A, 34, B-5	12	3,185
Hendricks-B, 45, 26	10	8,065
Hendricks-C, 40, B-5	5	2,325
Humble Oil & Ref. Co.:		
Hendricks-A, 34, B-5	17	4,554
Hendricks-B, 29, B-5	6	944
Hendricks-C, 32, 26	8	1,150
Hendricks-D, 47, 26	5	1,135
Independent O. & G.:		
Hendricks-A, 34, B-5	1	1,750
Howe-B, 44, 26	2	147
McCabe, 36, B-5	2	491
Hendricks, 42, B-5	1	20
Vardeman-B, 41, B-5	6	1,040
Magnolia Pet. Co.:		
Hendricks, 29, B-5	8	811
Marland Oil Co.:		
Hendricks, 33, 26	4	1,091
Hendricks-A, 29, 26	2	286
Hendricks-B, 34, 26	1	250
Mining & Eng. Co.:		
Hendricks, 10, B-22	1	250
Murchison & Cranfill:		
Hendricks-A, 35, B-5	3	987
Hendricks-B, 35, B-5	3	1,032
Hendricks-C, 33, B-5	1	140
Hendricks-H, 33, 26	1	2,000
Hendricks-I, 34, 26	2	1,333
Prairie:		
Hendricks, 40, 26	6	2,914
Cowden, 3, B-12	3	1,318
Pure Oil Co.:		
Hendricks-A, 41, B-5	10	2,362
Hendricks-B, 34, B-5	13	3,516
Hendricks-C, 45, 6	14	8,401
Republic Prod. Co.:		
Hendricks-A, 45, 26	4	2,250
Hendricks-B, 41, B-5	5	1,927
Hendricks-C, 42, B-5	5	447
Shell Pet. Corp.:		
Hendricks-A, 45, 26	6	2,594
Hendricks-B, 29, B-5	5	1,306
Hendricks-C, 29, B-5	8	3,389
Hendricks-D, 41, B-5	6	854
Hendricks-E, 40, B-5	4	879
Hendricks-F, 46, 26	7	3,103
Hendricks-G, 39, 26	1	106
Shell-Texas Co.:		
Cowden-A, 3, B-12	6	1,788
Hendricks, 45, 26	6	2,103
Hendricks-A, 29, B-5	10	2,986
Hendricks-B, 40, 26	6	1,263
Hendricks-C, 40, 26	6	3,246
Hendricks-D, 40, 26	6	1,479
Hendricks-E, 40, 26	4	2,013
Skelly Oil Co.:		
Hendricks, 40, 26	12	9,381
Hendricks-B, 39, 26	2	37
Southern Crude O. P. Co.:		
T-67 Hendricks-A, 42, B-5	4	134
T-67 Hendricks-3-A, 4, B-12	4	864
T-67 Hendricks-B, 44, 26	4	651
T-67 Hendricks-3-B, 33, 26	4	753
T-67 Hendricks-C, 33, B-5	5	768
T-67 Hendricks-2-D, 28, 26	3	1,064
T-67 Hendricks-E, 42, B-5	4	227
T-67 Hendricks-F, 33, B-5	4	717
T-68 Hendricks-3-A, 33, B-5	3	459
T-68 Hendricks-B, 46, 26	1	187
T-88 Hendricks-A, 44, 26	6	1,070
T-88 Hendricks-B, 4, B-12	3	968
T-88 Hendricks-C, 29, B-5	1	991
T-88 Hendricks-H, 28, B-5	4	781
T-88 Hendricks-I, 30, B-5	6	1,522
T-88 Hendricks-D, 4, B-12	2	3,253
T-88 Hendricks-J, 30, B-5	6	1,360
T-88 Hendricks-K, 41, 26	4	1,069
T-88 Hendricks-L, 4, B-12	2	1,849
T-88 Hendricks-M, 33, 26	28	10,034
T-88 Hendricks-N, 28, 26	4	762
T-88 Hendricks-O, 28, 26	1	265
T-88 Hendricks-P, 28, 26	1	324
T-88 Hendricks-Q, 27, 26	1	215
T-88 Hendricks-R, 27, 26	2	1,145
T-88 Hendricks-S, 34, 26	2	1,011
T-88 Hendricks-T, 34 26	5	961
T-88 Hendricks-U, 41, 26	7	1,828
T-88 Hendricks-V, 29, 26	1	195
T-88 Hendricks-W, 5, B-12	1	1,360
T-89 Hendricks-A, 35, B-5	3	421
T-89 Hendricks-B, 35, B-5	2	380
T-89 Hendricks-C, 35, B-5	1	110

T-89 Hendricks-E, 40, B-5	1	5
T-89 Hendricks-F, 40, B-5	1	149
T-89 Hendricks-H, 46, 26	1	136
T-264 Hendricks, 5, B-12	1	4
Texon Oil & Land Co.:		
Hendricks-A, 41, B-5	6	787
Hendricks-B, 45, B-5	5	1,311
Winkler O. P. Co.:		
Hendricks, 33, 26	1	129
Total Hendricks Pool	478	152,015
Leck Area		
Atlantic Kesslar & Logan:		
Leck, 3, 74	1	654
Amerada Pet. Corp.:		
Leck, 3, 74	1	331
Empire Gas & Fuel Co.:		
Daugherty, 3, 74	1	406
Total Leck Area Pool	5	1,391
O'Brien Pool		
Richardson et al:		
Stockton, 50, F	1	628
Grand total Winkler County Pool	484	154,034

PECOS COUNTY

Week Ended December 29

Yates Pool

Company and lease—	Wells	Bbls.
California Co.:		
Yates, Lease 1	17	5,145
Smith, Lease 1, Sec. 37	3	421
Smith, Lease 1, Sec. 23	4	601
Smith, Lease 2	2	194
Smith, Lease 3	12	1,589
Tippett, Lease 1	1	40
Cosby Drilling Co.:		
M. A. Smith	1	350
Gulf Prod. Co.:		
All leases	32	9,197
Humble O. & R. Co.:		
M. A. Smith	10	1,381
Smith-B	5	630
Kirby Pet. Co.:		
J. H. Tippett	1	73
Kirby Pet. & Edson:		
J. H. Tippett	1	208
Marland Oil Co.:		
Yates-A	9	951
Matador Oil Co.:		
Smith	2	1,252
Mazda & Savoy:		
Smith	2	661
McMan Oil & Gas Co.:		
Smith-A	1	566
Smith-B	4	1,205
Smith-C	2	311
J. H. Tippett	3	357
McMan & Marland:		
Yates	17	2,246
Mid-Kansas & Transcontinental:		
Yates-A	24	9,423
Yates-B	25	4,716
Yates-C	10	3,711
Yates-D	6	6,079
Yates-E	1	114
Yates-F	4	664
Yates-G	4	1,016
Yates-H	7	5,253
Smith	2	548
Smith-Taylor	18	2,294
Oil Operators Trust:		
Pecos River	7	750
Pecos Valley Oil Co.:		
Fee, Sec. 22, Blk. 16	1	112
Phillips Pet. Co.:		
Smith	1	83
Red Bank Oil Co.:		
Smith	5	337
Shell Pet. Co.:		
Tippett	11	1,504
Smith	9	915
Smith-B	1	655
Smith-D	2	340
Simms Oil Co.:		
Smith	7	5,181
Skelly Oil Co.:		
Tippett	1	102
Texon Oil & Land Co.:		
Yates	2	0
Total Yates Field	279	71,175

West Texas Production

West Texas is closing the year by boosting its total production since the discovery of the Westbrook Pool in Mitchell County in January, 1921, to close to 200,000,000 bbls. Hendricks, the youngest of the major areas, has produced the bulk of this with a total recovery of around 60,000,000 bbls. Church & Fields follows with a recovery of around 55,000,000 bbls. Big Lake is next in order with around 37,000,000 bbls. and Yates, the most sensational of all of them, is nearing the 25,000,000-bbl. mark. Yates, however, has produced less than 5 per cent of its potential since the field was opened.

With a 9,000-bbl. increase in the movement of West Texas crude, the 5,800-bbl. gain in production was offset, with the result of halting the steady increase of runs to storage. Runs to storage were reduced approximately 3,000 bbls. All of the pipe line companies moved more crude than during the previous week. Storage runs are expected to be further reduced when Atlantic Pipe Line Co.'s runs show in the crude movement reports. That company started running oil through its 10-inch carrier to Port Arthur from Midland December 19.

Below is a comparative table of crude movements in West Texas:

PIPE LINE RUNS

	Last week	This week
Gulf Pipe Line to Ranger, Tex.	24,099	25,600
Humble Pipe Line to San Angelo, Tex.	38,573	39,111
Humble Pipe Line to Ingleside, Tex.	49,379	48,922
Illinois Pipe Line to Del Rio, Tex.	17,000	17,000
Magnolia Pipe Line to De Leon, Tex.	28,579	29,670
Pasotex Pipe Line to El Paso, Tex.	5,916	7,603
Shell Pipe Line to Healdton, Okla.	38,995	39,026
Total	202,541	206,932
TANK CAR SHIPMENTS		
Humble Pipe Line from McCamey, Tex.	27	175
Orient Pipe Line from McCamey, Tex.	150	0
Southern Crude Pipe Line from McCamey, Tex.	0	0
The Texas Company from Crossett, Tex.	567	1,325
American Petroleum Co. from Pyote, Tex.	6,419	10,931
Independent Oil & Gas Co. from Pyote, Tex.	3,388	0
Shell from Monahans	3,179	5,545
Skelly Oil Co. from Pecos	2,870	2,258
Southern Crude Oil Purchasing Co. from Wickett	17,312	16,023
The Texas Company from Monahans	9,270	9,783
Burford Oil Co. from Pecos, Tex.	136	2,366
Total	43,318	48,346
RUNS TO REFINERIES		
Amarillo Production Co. from Pyote, Tex.	1,772	1,574
Blue Bonnett Refining Co. from Wickett, Tex.	3,385	3,643
Col-Tex Ref. Co., Colorado, Tex.	6,185	6,440
Humble Oil & Refining Co., McCamey, Tex.	9,519	9,609
Midland Refining Co., Midland, Tex.	1,870	1,740
Tonkawa Refining Co., Pyote, Tex.	3,461	3,270
Valley Refining Co., Pyote, Tex.	3,064	2,983
Big Spring Refining Co., Big Spring, Tex.	2,496	1,965
Total	31,752	31,224
SUMMARY		
Pipe line runs	202,541	206,932
Tank car shipments	43,318	48,346
Runs to refineries	31,752	31,224
Total daily dispositions	277,611	286,502
Daily average production	331,124	336,813
Daily average to storage	53,513	50,311

BOOKLET ON PREVENTION OF FIRES AND ACCIDENTS

The Petroleum Section of the National Safety Council has recently issued a pamphlet entitled "Help Prevent Fires and Accidents" for general distribution throughout the service stations of the country. The pamphlet is attractively illustrated in a way that will attract the customer's attention to the extent that he will read the very timely suggestions offered in the folder. A great many of the fires in service stations are caused through the carelessness or negligence of the customers and a wide distribution of the pamphlet will do much to awaken the customer to the many hazards around the filling station or around the garage.

Some time ago Safety Engineer C. P. Anderson of the Richfield Oil Co. suggested to Engineering Committeeman R. E. Donovan of the Petroleum Section, that an attractive folder containing such suggestions be prepared for instruction to the customers. In accordance with this suggestion H. N. Blakeslee, petroleum representative for the National Safety Council, prepared the pamphlet with the list of illustrations.

CONSERVATION MEETING

LOS ANGELES, Calif., Dec. 29.—The committee in charge of repressuring and gas conservation in Santa Fe Springs, California, will meet January 3, at which time it is hoped enough operators will have signed the agreement to make up the required 80 per cent. It is considered possible that some will agree to the repressuring but may decline to accept the gas conservation plan, but this is still undetermined.

WEST TEXAS OIL BUREAU URGES AMENDMENT OF TEXAS LAND LAWS

MIDLAND, Tex., Dec. 31.—Resolutions were passed at the West Texas Chamber of Commerce Oil and Gas Bureau midwinter meeting held in Midland today urging the State Legislature to make changes in some of the existing land laws of Texas. Foremost of those changes was the request to change the University leasing act passed in 1925.

It proposes to have the Board of Regents determine when and how much state land shall be sold instead of having the Land Commissioner retain that authority. Another change suggested in the same law was to abolish the present system of sealed bids and use a public auction system similar to that employed in the sale of Oklahoma Indian lands.

Chairman Hamilton's Address

The meeting was largely attended by representative groups of landowners from the several districts in the Texas Panhandle and West Texas. W. B. Hamilton, chairman of the bureau, presided and delivered an address in part as follows:

The meeting of this oil and gas bureau announced to be held in Midland on December 17 was postponed in order that the manager and chairman could go to Austin on that day to further the campaign against the announced program of the Commissioner of the Land Office to sell oil and gas leases on the 1,500,000 acres of land belonging to the University of Texas. We have taken the stand that the way in which the lands of the University are to be put upon the market to be leased for minerals makes it impossible to secure proper competition at one time for so large a body of land.

We believed then and now that those urging the commissioner to place these leases for sale were almost altogether lease speculators, that no company engaged in the oil business, large or small, desired these leases to be offered for sale. It was our contention that not one acre should be offered for sale until the legislature shall have time to meet and repeal the antiquated and deficient law of 1925, and pass a law to insure the administration of the university lands and the lands belonging to the available school fund in a businesslike way. We believe that if leases on the university lands are sold as now advertised, the loss to the endowment fund to the university will be not less than $20,000,000 and possibly $50,000,000.

Loss to the State

Not only would the University lose this tremendous amount which would be paid as bonuses if these leases were put up for sale gradually as there was a market for them, and the leases were sold at public auction and not through sealed bids, but the University would likewise lose a tremendous sum because the price for which its royalty oil would be sold, would of necessity be driven down, bringing great loss, not only to the University but to the citizens of West Texas.

Mark my prophecy that when the price at which these leases are sold is known to the public, you will see that the amount of bonus money secured to the University for these leases will not be one-five hundredth part of the real market value.

The early patriots of Texas set aside this great estate as an endowment to provide for the education of young men and women of the State. The common school fund has a like amount of unsold leases. This same iniquitos law governs the sale of leases on lands belonging to the common school fund, and unless this law is repealed, the school children of Texas are going to be deprived of this great estate set aside for them.

My attention has been called to one instance where property should have been sold for $10,000 an acre, but was sold for $3 per acre. I do not suggest there has been any wrong doing on the part of any official, but that any law which brings about such a result should, at the earliest opportunity, be changed.

Well Spacing

Another equally important reason for postponing the meeting called for December 17 was to permit the chairman of this bureau to protest in behalf of the land owners of Gray and Wheeler Counties the application made by the attorney-general to the Railroad Commission, seeking to change Conservation Rule 37, which provides for spacing of oil wells 300 feet apart, to read 1,000 feet to the property line, that is 2,000 feet between line wells, and leaving the drilling of inside wells 300 feet apart. It is unreasonable to say that line wells should be 2,000 feet apart, and inside wells 300 feet apart. This certainly could not have been a mere conservation measure. If the wells were to be 2,000 feet apart at one place they should have been at another. If this rule was adopted, more than 100 tracts of land could not have been drilled. There could be but one well to each 160 acres. If this was a good conservation measure for Gray and Wheeler Counties, because as stated by the attorney-general, the oil was produced from a granite wash, why did he not make it applicable to all northwestern Texas counties producing oil from granite wash? And why did not his application cover the Permian Basin in West Texas, Winkler County, Ward County, Pecos County, Crane County and Upton County? Here the lime formation from which the oil is produced is many times as porous as the granite wash.

It was our opinion the assistant attorney-general was trying to accomplish through the rulings of the Railroad Commission that which the courts had denied him.

Stream Beds and Vacancies

The assistant attorney-general introduced as a basis for his application the petition he had filed against 500 landowners and lease holders, who have property adjoining what is called a "navigable stream," the north fork of Red River in Gray and Wheeler Counties. The rule asked for would have kept the landowners or their lessees from drilling for oil and gas within 1,000 feet of this so-called river—which is dry almost every day of the year.

This stream was so insignificant that the State of Texas when it patented these lands made no mention of any river, and the bed of the same was patented to the citizens of Texas at the same time as the rest of the land.

The great State of Texas is endeavoring to take this patented land away from those people who have lived there through hardships for 30 years or more.

To remedy this situation we would suggest two laws:

A law should be passed that where so-called vacancies and beds of so-called "navigable streams" are established by the State, those who hold title by virtue of patents issued by the State to these lands involved or those persons who have taken possession of the land under patents issued by the State in which there is an excess, should have the prior right to purchase said lands from the State and should have the prior right of filing application for permits to develop the oil and gas thereunder, within a reasonable length of time after final judgment has been rendered in favor of the State. Where there is established unappropriated public domain and where no patents have been issued thereto, said lands should be sold to the highest bidder. Under this statute, the state's rights to recover these so-called vacancies and beds of so-called "navigable streams" would be absolutely protected.

Another law should be passed which will change the venue of suits on supposed vacant strips of land and beds of supposed "navigable streams" from the District Court in Travis County, Texas, to the District Court in the county where the land is situated.

GEOLOGICAL SURVEY'S OIL STUDIES OF GREAT IMPORTANCE TO INDUSTRY

By George Otis Smith*
Director of United States Geological Survey.

Eight years ago in talking before the American Association of Petroleum Geologists at Dallas I mentioned the obvious debt that geologic science owes to oil. I was not referring to the endowment for research since made available by the generosity of individuals and corporations but rather to the reaction between practical test and scientific theory. It was then and is now my opinion that the element that has stimulated the growth of applied geology and strengthened it at every stage in that growth is the promptness with which, in oil development work, the judgments of the geologist are put to the test. Not only does geology at work use the facts gained from field observation, but its engineering accuracy is commonly subjected to an immediate proof on the ground. The true worth of the petroleum geologist's science is shown up by the drill before there is any opportunity to forget what was predicted or who predicted it. Direct responsibility of this kind has a tendency to hasten the evolution of a very practical science. So these recent years have witnessed the development of specialized geology—highly scientific at heart but truly utilitarian in application.

This growth of the science of oil geology extends only through a decade or two and it has been rapid growth in the collection of facts and the deduction of principles. With only the stature and strength of youth, this branch of applied science has been forced by circumstances to take up the man-sized job of finding oil. We may conjecture whether or not oil geology might have done better if it had been given sufficient time to reach maturity, but we must admit that the fortunate outcome of this precocious growth was that the oil companies in their period of greatest expansion found ready for use an agency not available only a few years before. Geology met the test.

Present Work of Survey

The present-day contributions that are being made to oil by the Federal Geological Survey may be grouped under three heads: Stratigraphic and lithologic studies, the work of discovery of favorable structures, and production studies from the geologic side.

First in order should be mentioned the stratigraphic and lithologic studies both general and detailed. This is a phase of investigation to which the Federal Survey has contributed most largely and this type of work perhaps best illustrates the peculiar function of a survey under governmental auspices in contributing to the technical work performed directly by the scientists employed by the industry. Both the formulation of broad theory and the extensive collection of field facts are the resultant products of this type of work and in such contributions the Federal Survey must endeavor to retain the leadership that characterized its earlier activity. The expressed demand by company geologists for general studies continues and the importance of meeting this demand is fully appreciated by the government bureau.

For example, for the past several years special attention has been given to the stratigraphy of a broad area in southeastern Utah and adjoining parts of Arizona and New Mexico. The rock sequence has been studied and mapped in more detail, new formations have been determined, and authoritative regional correlations established. Another project of similar nature was the correlation and mapping of the upper Cretaceous deposits in southwestern Arkansas. An important lithologic study is being made of the Green River beds in the Uinta and Green River Basins, concerning the methods of origin of oil shale, its variations in character and richness, and possible light that may be thrown on the origin of petroleum. Investigation of the lithology of the rocks in salt domes is being continued.

Some of the stratigraphic information obtained in this type of work is made public by reports, and some of it is incorporated in state geologic maps which are being prepared by the Federal Survey either alone or in co-operation with the states. Correlation charts for a number of the states have been issued, showing at a glance the present knowledge and views of the identification and correlation of the formations; these are proving very helpful to and in great demand by company geologists.

Geologic studies of this first type now being prosecuted involve field work in Pennsylvania, Texas, California, Utah New Mexico, Colorado, and Wyoming.

The second class of geologic activity, commonly given more prominence in public thought, concerns itself more directly with the discovery of oil. This field of endeavor has been largely taken over by the army of geologists in corporate or private employ. At present, the search for favorable structures is less active, partly, I believe because oil finding is less urgent in a period of overdevelopment and overproduction, and secondly because for the larger part the structures observable by ordinary geologic methods have been already found. I am not, however, one of those who think that the geophysicist has taken away the geologist's job. In the adoption of geophysical methods in the detection and tracing of geologic structure connected with oil accumulation the role of the geologist has changed character but must not be regarded as having been terminated. I believe that geophysical methods can yield best results only as geology directs the proceeding and interprets the results.

Location of Structures

The location of structures by the Federal Survey has in recent years been mostly confined to the public land states, where the Government as landlord or trustee has a special interest and well defined responsibility. Much of this information must be gathered so that the survey may know the potential value for oil of public lands so that it may advise as to the proper disposition of these lands under the mineral leasing laws. Among the studies made in the past few years for this purpose are those of the Cat Creek and Kevin-Sunburst Fields in Montana, potential areas along the west flank of the Black Hills and other areas in Wyoming, the San Rafael swell, Salt Valley anticline, and Moab district in Utah, and a large region in northeastern Colorado. Geologic studies of the Elk Hills district, California, and the Teapot Dome, Wyoming, have also been made to assist the Navy Department in the administration of the petroleum reserves.

The present quest for oil in southeastern Idaho is being guided in considerable part by the maps and structural data resulting from Mansfield's classic studies of phosphate rock in that region, recently published as Survey Professional Paper No. 152, and similar maps and data resulting from Hewett's studies of coal on the west side of Big Horn Basin published as Survey Professional Paper No. 145 have played a significant role in the development of the Grass Creek, Buffalo Basin and Oregon Basin structures and their satelites. Survey field sive studies in eastern and southern Utah, northwestern, northeastern, and work, in recent years, including extensoutheastern Colorado, and eastern Montana, has been directed more by the exigencies of administrative need than otherwise, and although the results obtained are available for administrative use, they are as yet in greater part unpublished.

Oil Production Studies

To the third class of studies—those relating to oil production—the Federal Survey can also continue its contributions by both field and laboratory men. This seems to me the field of largest future interest and value. By training, the geologist is best fitted to think in terms of the third dimension and to visualize conditions at depth. Likewise he appreciates the physical character and occurrence of the sands in which the oil and gas accumulate and can much better discuss the problem of improved recovery than the mechanical engineer or the laboratory physicist. This has been shown in the recent symposiums and conferences on the role of gas in oil production.

Some very practical thought is being given by the United States Geological Survey's mineral leasing petroleum engineers to problems of increased recovery, of preservation and utilization of gas pressures, and of protection of deposits against damage by water and in other ways. Laboratory studies, supplemented by some field work, are being made by survey physicists and chemists in conjunction with the geologists. Investigation is continued of the feasibility and results of introducing soda into wells in fields where the water-drive is being practiced, for rapidly loosing the oil from the sand to which it adheres and hence greatly increasing recovery. The methods developed for determining porosity and saturation are useful in appraisals of oil properties. A study of the flow of fluids through sands has led to a formulation of the relations between flow, pressure and viscosity. One of the chemists is investigating the character and identity of natural hydrocarbons and similar questions that have a bearing on the origin of petroleum. One of the physicists is continuing his study of varying earth temperatures in deep wells; there is indication that out of this study may come certain conclusions that will help in determining rock structure in places where the rocks are not exposed.

Speaking for the United States Geological Survey, I am of the opinion that, perhaps, the Federal Government's best contribution to the oil industry has been the large group of specially trained men graduated from its two scientific bureaus. Scientific and technologic research initiated in the universities and these bureaus have been quickly translated into practice by these graduates entering the employ of the oil companies. In no other industry are there more personal contacts with the Federal Government, and I believe this has materially helped in the effective co-operation which has characterized the discussion of petroleum problems, both technical and economic, in the past four or five years.

*Written for The Oil and Gas Journal.

C. E. OLMSTED NAMED MANAGER IN CALIFORNIA

LOS ANGELES, Dec. 31.—Appointment of Clarence E. Olmsted as executive vice president and general manager of The Texas Company of California was announced here yesterday. Other officers and directors will be elected at the next Board meeting soon.

Until recently, when he was named temporary successor to Jacques Vinmont, former president, Mr. Olmsted was vice president and director in charge of the company's producing department. He is 38 years of age and was graduated from Columbia and Stanford Universities, where he was awarded degrees in engineering.

Mr. Olmsted entered the oil industry in 1919 in the engineering department of The Texas Company at New York, with successive positions in the refining and terminal departments. In 1924 he came to southern California as head of the transport and natural gas departments of the California Petroleum Corp. Since then he has been in charge of the refining, marine, personnel and other important departments of that company which this year was merged with The Texas Company.

The Texas Company of California operates in Arizona, Washington, Oregon, California and Nevada.

MOVES OFFICES TO WICHITA

WICHITA, Kans., Dec. 29.—The Mid-Kansas Oil & Gas Co. is moving its Kansas division offices from ElDorado to Wichita. H. M. Williams, superintendent of production, will be in charge.

OIL OPERATORS THANK TEXAS COMMISSIONERS

(Continued from Page 38)

las, Tex., Thursday, December 27, on motion of J. Edgar Pew, seconded by John R. Suman, the following resolution was adopted and the secretary instructed to forward a copy to the Railroad Commission of Texas:

WHEREAS, during the past year unprecedented situations within the oil industry have arisen in the State of Texas, whereby, at times, great economic and physical waste of one of our country's most important and irreplaceable natural resources have threatened, and

WHEREAS, experience in the industry has shown that these evils can be largely eliminated by lawful methods of co-operation, and

WHEREAS, the Railroad Commission of the State of Texas, has worked and cooperated with those who have endeavored to formulate equitable plans whereby these situations could be met and eliminate this unnecessary waste, therefore, be it

RESOLVED by this Board of Directors, that a vote of thanks and the appreciation of this body be extended the members of the Railroad Commission of the State of Texas, for their untiring efforts, and the consideration and co-operation given the industry in its efforts to reduce waste and thus confer unestimable benefits upon all branches of the industry as well as the public.

Late Fields

(Continued from Page 38)

5,100 feet. Ring Petroleum Co. successfully finished No. 1 Santa Fe Springs flowing 3,000 bbls. daily from the deep Buckbee zone at 5,690 feet.

OKLAHOMA

The second group of drilling wells in the Mission Pool of the Greater Seminole area will probably be started on February 1, instead of January 1, as originally planned. The decision was reached at a meeting held Monday, December 31, in Tulsa. There were a few operators interested in this region who were not represented at the meeting, but it is believed that they will agree to the February 1 starting date. At least no wells were started in the pool this week.

According to Umpire Ray M. Collins' interpretation of the ruling on completing the first group of Mission Pool wells, February 15 being the official completion date, all wells will be allowed five days for drilling in and testing out the sand prior to that date.

EAST CENTRAL TEXAS

Daily average production of East Central Texas fields for the week was 22,964 bbls., a decrease of 69 bbls. from that of the previous week. Figures by fields are:

	Bbls.
Boggy Creek	3,185
Cedar Creek	205
Currie	526
Mexia	6,213
Minerva	725
Nigger Creek	470
Powell	9,580
Richland	485
Thrall	35
Wortham	1,540
Total this week	22,964
Total last week	23,033
Decrease	69

TO OPERATE IN FEBRUARY

CHICAGO, Dec. 28.—J. S. Cosden was in the city last week accompanied by W. D. Richardson who is building a refinery adjoining the Cosden plant at Big Spring, Tex., to consult with George Moore who will be the manager of the refinery division of Cosden & Co. It was stated that owing to the delays incidental to the completion of such large enterprises it would be impossible to have the plants in operation before the middle of February, 1929, and that it might be as late as March 1 before crude was actually run to stills.

DOMESTIC PRODUCTION FELL OFF IN 1928

(Continued from Page 38)

	Daily av. (bbls.)	Month (bbls.)
Pearson-St. Louis	129,678	3,890,340
Henryetta, Deaner-Lyons, etc.	6,990	209,700
Wewoka	5,367	161,010
Cromwell	8,241	247,230
Papoose-Gilcrease	3,593	107,790
Jarvis-Holm	530	15,900
Weleetka	678	20,340
Wetumka	39	1,170
Yeager	388	11,640
Miscellaneous	2,572	77,160
Total	449,939	13,498,170
Creek County—		
Glen Pool, Sapulpa and Kiefer	6,697	182,910
Cushing-Shamrock	18,966	568,980
Bristow, Kellyville and Depew	14,430	432,900
Pickett Prairie and North Bristow	1,813	54,390
Eastern Bristow or Slick	8,197	245,910
Total	49,503	1,485,090
Pawnee County—		
Cleveland	2,471	74,130
Keystone	1,397	41,910
Jennings	2,915	87,450
Otoe	686	20,580
Ralston-Masham	174	5,220
Total	7,643	229,290
Payne County—		
Yale, Quay and Ingalls	4,366	130,980
North and South Cushing	1,604	48,120
Mehan-Ripley	1,397	41,910
Total	7,367	221,010
Lincoln County—		
Davenport	1,033	30,990
Kendricks	262	7,860
Total	1,295	38,850
Kay, Grant and Noble Counties—		
Blackwell	1,030	30,900
Vernon	1,173	35,190
Otstot	983	29,490
Deer Creek	742	22,260
Ponca City	740	22,200
Mervine	333	9,990
North Braman	2,529	75,870
South Braman	1,250	37,500
Hubbard	2,235	67,050
Thomas	968	29,040
Garrett	49	1,470
Tonkawa	11,523	345,690
Billings	180	5,400
Miscellaneous	306	9,180
Total	24,041	721,230
Garfield—		
Garber	6,821	204,630
Logan County—		
Lovell	1,148	34,440
Marshall	7,862	235,860
Total	9,010	270,300
Carter County—		
Healdton	13,542	406,260
Hewitt	8,952	268,560
Graham	3,567	107,010
Fox	2,692	80,760
Brock	697	20,910
Sholom Alechem	14,528	435,840
Total	43,978	1,319,340
Stephens and Cotton Counties—		
Loco-Milroy	1,679	50,370
Comanche	555	16,650
Duncan	6,848	205,440
Walters	1,046	31,380
Kilgore	391	11,730
Total	10,519	315,570
Jefferson County—		
Hambro	2,298	68,940
Caddo County—		
Cement	1,740	52,200
Garvin County—		
Robberson	2,114	63,420
Grady County—		
Knox	5,112	153,360
Pontotoc County—		
Allen	25,028	750,840
Beckham County—		
Sayre	36	1,080
Marshall County—		
Madill	263	7,890
Total November	735,185	22,055,550
Total October	735,841	23,431,071
Difference	20,656	1,375,521

NORTH TEXAS
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
Burkburnett	10,990	329,700
Electra	12,326	369,780
Iowa Park-K-M-A	3,110	93,300
Archer County	18,751	562,530
Clay County	475	14,250
Wilbarger County	29,593	887,790
Montague County	7,582	227,460
Young County	8,059	241,770
Baylor County	67	2,010
Cook County	2,210	66,300
Total November	93,163	2,794,890
Total October	96,374	2,987,594
Difference	3,211	192,704

KANSAS
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
Marion County—		
Florence-Urschell	483	14,490
Peabody	1,166	34,980
Covert-Sellers	438	13,140
Lost Springs	1,250	37,500
Total	3,337	100,110
Butler County—		
Elbing	2,056	61,680
Potwin	432	12,960
Cameron-Robinson	454	13,620
Wilson-Dunkle	1,642	49,260
Towanda	2,302	69,060
Fox-Bush	913	27,390
Suttle-Koogler	1,518	45,540
Eldorado	7,163	214,890
Smock	181	5,430
Leon-Weaver	7,272	218,160
North Augusta	901	27,030
South Augusta	1,280	38,400
Sluss	247	7,410
Douglass	119	3,570
Keighly	976	29,280
Benton	18	540
Blankenship	762	22,860
Total	28,236	847,080
Greenwood and Woodson Counties—		
Sallyards	1,466	43,980
Teeter-Pixley-Scott	5,816	174,480
Virgil	7,211	216,330
Thrall-Burkett	1,717	51,510
Seeley	6,196	185,880
Polhamus	967	29,010
Miscellaneous	740	22,200
Total	24,113	723,390
Cowley County—		
Rainbow Bend	997	29,910
Slick	531	15,930
Graham	407	12,210
Rock	161	4,830
Clark	149	4,470
Eastman	463	13,890
Winfield-New Salem	1,799	53,970
Miscellaneous	700	21,000
Total	5,207	156,210
Other Counties—		
Sumner	16,462	493,860
Rooks	39	1,170
Rice	962	28,860
Russell	4,116	123,480
Reno	35	1,050
Sedgwick	3,714	111,420
Harvey	30	900
Coffey	267	8,010
Chautauqua	2,219	66,300
Elk	2,267	68,010
Wilson	189	5,670
Montgomery	1,467	44,010
Allen	653	19,590
Neosho	514	15,420
Lyon	827	24,810
Miami	1,390	41,700
Franklin	418	12,540
Douglas	19	570
Bourbon	15	450
Linn	211	6,330
Anderson	1,706	51,180
Labette	20	600
Chase	25	750
Woodson	779	23,370
Total November	99,228	2,976,840
Total October	98,660	3,058,460
Difference	568	81,620

CENTRAL TEXAS
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
Coleman	3,330	99,900
Comanche	184	5,520
Stephens	6,789	202,670
Eastland	9,415	192,450
Brown	9,812	294,360
Callahan	3,657	109,710
Runnels	271	8,130
Throckmorton	758	22,740
Jack	1,219	36,570
Palo Pinto	394	11,820
Shackelford	10,446	313,380
Erath	260	7,800
Jones	5,255	157,650
Total November	48,790	1,463,700
Total October	47,672	1,477,832
Difference	1,118	14,132

EAST CENTRAL TEXAS
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
Boggy Creek	1,576	47,280
Cedar Creek	187	5,610
Currie	522	15,660
Mexia	6,348	190,440
Minerva	701	21,030
Nigger Creek	431	12,930
Powell	10,082	302,460
Richland	513	15,390
Thrall	32	960
Wortham	1,535	46,050
Total November	21,927	657,810
Total October	22,874	709,120
Difference	947	61,310

WEST TEXAS
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
Field and County—		
Big Lake, Reagan	15,888	476,654
Church & Fields, Crane	28,973	869,200
Connell, Ector	28,992	869,771
Harding, Howard	6	180
Hendricks, Winkler	15	462
Ira, Scurry	145,520	4,365,604
Leck, Winkler	31	930
McElroy, Taylor, Upton	956	28,682
McCamey-Taylor, Upton	10,882	326,457
McElroy, Crane	13,243	397,298
O'Brien, Winkler	875	26,250
Powell, Crockett	2,378	71,375
Settles, Glasscock	*	*
Stephens, Fisher	860	25,814
Skelly, Reagan	46	1,384
Waddell, Crane	18	532
Westbrook & Iatan, Mitchell	2,936	88,095
Wheat, Loving	280	8,408
Yates, Pecos	71,995	2,159,862
Total November	323,894	9,716,950
Total October	324,719	10,065,444
Difference	825	348,494

*Included with Chalk.

TEXAS PANHANDLE
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
County—		
Hutchinson	29,022	870,660
Carson	5,422	162,660
Gray	25,150	75,450
Moore	2,455	73,650
Potter	24	720
Wheeler	784	23,520
Total November	62,857	1,885,710
Total October	66,496	2,061,376
Difference	4,639	175,666

NORTH LOUISIANA
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
Caddo light	9,297	278,910
Caddo heavy	2,930	87,900
Homer	4,110	123,300
Haynesville	5,802	174,060
DeSoto-Red River	4,132	123,960
Elm Grove	583	17,490
Bellevue	935	28,050
Cotton Valley	4,195	125,850
Urania	6,268	188,040
Pleasant Hill	528	15,840
Total November	38,780	1,163,400
Total October	38,699	1,199,669
Difference	81	36,188

ARKANSAS
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
El Dorado	5,053	151,590
Smackover light	7,085	212,550
Smackover heavy	54,180	1,625,400
Stephens	1,010	30,300
Nevada County	1,388	41,640
Lisbon	1,053	31,590
Bradley	12,667	380,010
Champagnolle	100	3,000
Total November	82,536	2,476,080
Total October	85,564	2,652,484
Difference	3,028	176,404

GULF COAST
Texas
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
Allen Dome	7	210
Barbers Hill	1,577	47,310
Batson	1,355	40,650
Big Creek	2,289	68,670
Blue Ridge	6,487	194,610
Brenham	153	4,590
Boling	2,113	63,390
Damon Mound	669	20,070
DeWalt	3,798	113,940
Fannette	24	720
Goose Creek	6,784	203,520
High Island	637	19,110
Hull	11,717	351,510
Humble	3,336	100,080
Markham	306	9,180
Nash Dome	953	28,590
North Dayton	677	20,310
Orange	3,772	113,160
Orchard	112	3,360
Pierce Junction	9,800	294,000
Raccoon Bend	659	19,770
Saratoga	991	29,730
Sour Lake	3,046	91,380
S. Liberty-S. Dayton	4,981	149,430
Spindletop	39,079	1,172,370
West Columbia	7,707	231,210
Total	113,029	3,390,870

Louisiana

Anse LaButte	54	1,620
Atchafalaya	772	23,160
East Hackberry	4,262	127,860
Edgerly	795	23,850
Evangeline	951	28,530
Lockport	3,511	105,330
Loreauville	5	150
Sorrento	620	18,600
Starks	815	24,450
Sulphur	2,725	81,750
Sweet Lake	1,906	57,180
Vinton	4,273	128,190
Welsh	34	1,020
Total Louisiana	20,723	621,690
Total Gulf Coast Nov.	133,752	4,012,560
Total Gulf Coast Oct.	124,151	3,845,630
Difference	9,601	166,930

SOUTHWEST TEXAS
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
Dale	758	22,740
Kingsville	287	8,610
Luling	13,885	416,550
Lytton Springs	1,198	35,940
Somerset	1,985	59,550
Mirando and Misc.	11,997	359,910
Total November	30,110	903,300
Total October	28,785	892,350
Difference	1,325	10,950

WYOMING
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
Alkali Butte	25	750
Big Muddy	2,653	79,590
Oregon Basin	3,595	107,850
Byron	33	990
Dutton	49	1,470
Elk Basin	950	28,500
Ferris	21	630
Grass Creek	2,251	67,530
Hamilton	722	21,660
LaBarge	2,552	76,560
Lance Creek	357	10,710
Lost Soldier	3,753	112,590
Osage	449	13,470
Poison Spider	1,005	30,150
Rock Creek	2,576	77,280
Rex Lake	159	4,770
Mule Creek	564	16,920
Lander	543	16,290
Salt Creek	36,412	1,092,360
Simpson Ridge	81	2,430
Total November	58,750	1,762,500
Total October	61,787	1,915,397
Difference	3,037	152,897

MONTANA
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
Cat Creek	1,527	45,810
Kevin-Sunburst	6,629	198,870
Pondera	1,810	54,300
Lake Basin	282	8,460
Total November	10,248	307,440
Total October	8,465	262,128
Difference	1,783	45,312

COLORADO
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
Craig	1,232	36,960
Fort Collins	2,399	71,970
Florence	1,233	36,990
Iles	1,845	55,350
Tow Creek	511	15,330
Rangely	100	3,000
Boulder	25	750
Total November	7,345	226,350
Total October	8,456	262,136
Difference	1,111	41,786

NEW MEXICO
Daily Average and Monthly Production in November

	Daily av. (bbls.)	Month (bbls.)
Artesia	1,018	30,540
Cap Rock (Maljamar)	179	5,370
Lea and Eddy	292	8,760
Hog Back	500	15,000
Rattlesnake	1,144	34,320
Table Mesa	137	4,110
Total November	3,270	98,100
Total October	3,139	97,309
Difference	131	791

WATER LINE LAID TO BARBERS HILL DOME

HOUSTON, Tex., Dec. 31.—An ample supply of good water for the drilling operations on the Barbers Hill Dome of Chambers County has been provided by Humphreys Corp. of Houston which has just completed the laying of 2½ miles of 6-inch line from Lost River and the installation of an electric powered pumping plant, the system to have a capacity, if needed, of 20,000 bbls. daily.

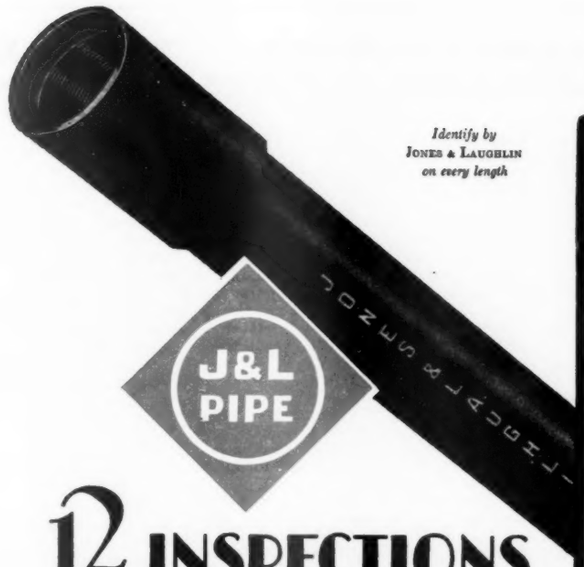
Water for previous operations has been provided from wells but this has been extremely salty and has caused considerable trouble and damage to equipment in addition to being uncertain for an adequate supply in the event of extensive drilling work which is getting under way in the field at present.

The Humphreys system is running approximately 6,000 bbls. daily now supplying not only the Humphreys operations but also those of Bennett Petroleum Co. and Joe Bashara, and it is contemplated that the Yount Lee Oil Co., which is operating on another side of the dome, will lay a line to connect with the system.

Cross Cracking Plants

THE M. W. KELLOGG CO.
7 Dey Street - New York

Houston, Texas . . . 1514 Petroleum Bldg.
San Francisco, Cal. . . . . 444 Market St.
Los Angeles, Cal. . 329 Petroleum Sec. Bldg.



Identify by
JONES & LAUGHLIN
on every length

12 INSPECTIONS INSURE UNIFORMLY HIGH QUALITY

J & L's adequate resources, ownership control of each process from ore mining to pipe making, nearly 80 years of experience in iron and steel making, and rigid inspection through each step of manufacture, are your guarantees that every length of J & L Seamless Casing you order is as nearly perfect as seamless casing can be made. Beginning with chemical and physical tests of raw materials, iron ore, coke and limestone (from J & L's own mines and quarries), inspection on J & L Seamless continues without interruption until the twelfth and final checking is made as the pipe is loaded for shipment.

In addition to the twelve tests and inspections (listed at right) a milling machine is kept busy constantly machining out samples for pull tests to insure tensile strength safely within requirements of the trade. Drillings are also taken during mill operations to be analyzed for chemical composition, and samples are microphotographed frequently to check grain structure.

Oil men declare: "There's no better Seamless made than J & L."

JONES & LAUGHLIN STEEL CORPORATION

Jones & Laughlin Building
PITTSBURGH - - PENNSYLVANIA

INSPECTIONS OF J & L SEAMLESS

1 Chemical tests of raw materials made at the mines and quarries, also before charging into blast furnaces.

2 Thorough analysis of pig iron produced by blast furnaces and metallurgical inspections as pig iron is made into steel in open hearth furnaces.

3 Chemical analysis for composition as steel is poured from open hearth furnaces into ingot molds.

4 Ingots rolled into blooms under temperature control.

5 Blooms pickled in strong acid to bring out defects. Inspectors pass blooms only after visible defects have been chipped out with pneumatic chisels.

6 As seamless tubes come from the straightener, inspectors scrutinize both outside and inside surfaces with the aid of specially designed lamps.

7 Ends trimmed; then pipe is inspected for wall thickness and correct outside diameter and roundness.

8 Pipe threads checked with certified gages and second inspection made for flaws, to insure clean cut accurate threads of proper pitch and taper.

9 Couplings as produced in our mills are closely inspected for correct tapping, threads accurately gaged for pitch and taper and checked on specially designed machines for alignment.

10 All items of previous inspections rechecked on testing benches, and stencil marks applied.

11 Each length given hydrostatic pressure test before rust-resisting coating is applied and pipe is delivered to shipping platform.

12 Final inspection of each length as it is loaded for shipment.

J&L STEEL

Of Interest to Sales Departments

GASOLINE CONSUMPTION INCREASED 11.6 PER CENT

Gasoline consumption in 35 states for the month of October, 1928, as indicated by reports made by wholesalers and dealers in the various states, under provisions of the gasoline tax laws or gasoline inspection laws, totaled 706,118,000 gallons, compared with 632,550,000 gallons in October, 1927, an increase of 73,568,000 gallons, or 11.6 per cent. Daily average consumption for October, 1928, was 22,778,000 gallons compared with a daily average of 23,913,000 gallons in September, 1928, a decrease in daily average during October of 4.7 per cent.

Gasoline consumption in these 35 states for the 10 months ending with October, 1928, amounted to 6,332,122,000 gallons, compared with 5,676,716,000 gallons for the corresponding period of 1927, an increase of 655,406,000 gallons, or 11.5 per cent.

Consumption during September and October for the State of New Jersey is also shown, as are the September figures for Connecticut.

The figures giving the quantity of gasoline sold or offered for sale, as reported under various laws follows: In some cases they are gross figures before deductions allowed for small quantities of gasoline reshipped or sold for other than taxable use, the tax upon which if paid, is subsequently refunded. All figures are subject to revision. Data were compiled by the American Petroleum Institute.

Gasoline Consumption by States, October, 1928

	Month of Sept., 1928 gallons	Month of Oct., 1928 gallons
Alabama	14,487,000	14,961,000
Arizona	4,879,000	5,040,000
Arkansas	16,331,000	11,493,000
Delaware	3,025,000	2,623,000
Florida	15,837,000	17,388,000
Georgia	16,568,000	19,166,000
Idaho	5,592,000	5,084,000
Indiana	37,687,000	37,607,000
Iowa	29,252,000	28,999,000
Kansas	30,748,000	26,658,000
Kentucky	12,500,000	13,110,000
Louisiana	13,768,000	15,270,000
Maine	9,689,000	8,773,000
Michigan	67,076,000	64,695,000
Minnesota	31,154,000	32,266,000
Missouri	32,518,000	32,543,000
Nebraska	17,777,000	19,029,000
Nevada	1,523,000	1,199,000
New Hampshire	5,381,000	4,958,000
New Mexico	3,441,000	3,436,000
North Carolina	21,623,000	23,230,000
North Dakota	17,744,000	14,041,000
Ohio	81,508,000	80,589,000
Oklahoma	25,374,000	25,438,000
Oregon	14,617,000	13,265,000
Rhode Island	6,003,000	5,866,000
South Dakota	10,507,000	11,033,000
Tennessee	16,489,000	16,277,000
Texas	59,659,000	62,380,000
Utah	4,744,000	4,154,000
Virginia	16,217,000	17,324,000
Washington	21,843,000	20,280,000
West Virginia	11,047,000	11,208,000
Wisconsin	37,530,000	33,927,000
Wyoming	3,266,000	2,808,000
Total	717,404,000	706,118,000
Daily average	23,913,000	22,778,000
Increase over last year:		
Amount		73,568,000
Percentage		11.6%
New Jersey	38,862,000	38,805,000
Connecticut	17,983,000	

TO FEATURE LEAD NAME

NEW YORK, Dec. 29.—Petroleum marketers in the East Coast area have shown considerable interest in the action by the United States Public Health Service in amending its recommendations regarding tetraethyl lead and ethyl gasoline. In its new recommendation, the health service urges state health authorities to call for the featuring of the "lead" part of the product's name rather than the "ethyl."

In a recent issue of Public Health Reports the following appears:

"Each filling station shall keep prominently displayed on each pump which delivers motor fuel containing tetraethyl lead a sign or signs reading as follows, in prominent heavy Gothic capital letters, black on white background: 'Contains lead (tetraethyl) and is to be used as motor fuel only. Not for cleaning or any other use. Avoid spilling.' "

QUESTION LEGAL RIGHT TO ENFORCE PROVISIONS IN CODES OF ETHICS

NEW YORK, Dec. 29.—Legality of the attitude of the Federal Trade Commission in making effective codes of ethics adopted by industries through enforcement of "Group 2" resolutions of such codes is seriously challenged by Commissioner W. E. Humphreys of the Federal Trade Commission, who evidently differs radically from the majority of that body on the question. With the recently adopted code of ethics of the American petroleum industry adopted at the Chicago meeting of the American Petroleum Institute, now before the commission for its approval, oil men have been displaying considerable interest in the attitude of the commission toward enforcement of code provisions covering unethical, although not necessarily legally unfair, trade practices.

In accepting codes, such as that adopted by the petroleum industry, from trade bodies desirous of clarifying trade practices, the commission has adopted the policy of classifying the provisions of these codes into two groups. The first group embodies practices already prohibited by law, and as such subject to prosecution at any time. Group 2, however, deals with violations, or practices, which the commission has hitherto considered lawful, but which are to be outlawed by majority opinion within an industry. Many of the provisions of the petroleum industry's code of ethics fall within the latter category.

Commission Resolution

On October 1, 1928, the majority of the Federal Trade Commission passed the following resolution: "That the clandestine violation of any of said resolutions, those accepted by the Federal Trade Commission merely as expressions of the industry as well as those approved by said commission, shall be deemed unfair methods of competition."

This attitude on the part of the commission, it has been felt, puts the necessary "teeth" in such codes of ethics as that adopted under the auspices of the American Petroleum Institute recently.

Now, however, it appears that opinion within the commission is not unanimous regarding that body's attitude on Group 2 resolutions in ethic codes. According to Commissioner Humphreys, adoption of this resolution by the commission seriously threatens the trade practice conference plan of the commission. Speaking before the American Face Brick Association at its recent convention at Hot Springs, Va., Commissioner Humphreys said:

"The trade practice conference system carefully built up by the Federal Trade Commission as a method of eliminating unfair practices and competition is threatened with destruction by the so-called clandestine violation resolution adopted by the commission October 1, 1928, and written into subsequent trade conference agreements.

"This resolution refers to what is known as Group 2 of the Trade Practice Conference rules. These rules forbid what the commission has heretofore considered lawful. They refer to economic and ethical questions, and not to unfair methods of competition.

"This resolution makes an act, not in itself unlawful, an unfair method of competition, and if such rule is violated clandestinely, the commission will attempt to enforce an order to cease and desist against the party so violating it. It makes unlawful what has heretofore been lawful.

"There has been quite a widespread feeling that the effect of this resolution will largely injure, if not completely destroy, the Trade Practice Conference system. It has alarmed business. It is believed that business and the legal profession will not look with favor on this attempt of the commission to increase its jurisdiction and powers; that business men will hesitate in entering a conference which may result in yielding some right that they now have.

"To state the proposition in another

(Continued on Page 156)

BROADCASTS PROGRAM

CHICAGO, Dec. 31.—Each Sunday afternoon the Chicago Symphony Orchestra broadcasts a program of classical music through an arrangement made by the Standard Oil Co. of Indiana. This is the first time that this orchestra which is internationally famous as one of the leading symphony orchestras of the world has broadcast its programs. The number of programs to be broadcast is 26. They come on the air at 6 p. m. central standard time, each Sunday.

To Correct Evils In Marketing all Aviation Product

NEW YORK, Dec. 29.—A definite effort to put the marketing of aviation gasoline and lubricating oils on a sound economic basis will be made by the Petroleum Section of the Aeronautical Chamber of Commerce, organized at the recent American Petroleum Institute meeting in Chicago.

Frank J. Shipman of the aviation sales department of The Texas Company, the city, chairman of the new group, expects to call the group together for definite consideration of some of the problems confronting this branch of the marketing division of the industry next month in conjunction with the annual meeting of the Aeronautical Chamber.

The new aviation group, made up primarily of nontechnical men, does not propose to work out itself standards for petroleum products to be used in aviation. The division will, however, endeavor to correlate work on the lines under way at present by the American Society for Testing Materials, the Society of Automotive Engineers, the Bureau of Standards, and the War and Navy Departments.

One of the first steps to be taken by the committee will be the conferring with aviation engine manufacturers regarding the types of fuel and lubricating oils required for aircraft. The engine manufacturers will be on hand for the Aeronautical Chamber's meeting next month and are expected to have some definite suggestions to put before the petroleum group.

Purpose of Group

Organization of the aviation petroleum group marks the first step by the industry to get its marketing of aviation products on a sound business basis. A number of the oil companies have been backers of various flights and aviation enterprises, investing rather heavily in these events, and utilizing their participation therein in their advertising campaigns. In a number of the recent notable flights, various oil companies have been "in" to the extent of $15,000 or more. A flier contemplating anything out of the ordinary in flying, such as an attempt to set an endurance record, record cross-country flights, etc., now generally lays his plans before the large

(Continued on Page 154)

TO DISCUSS FURNACE OIL SPECIFICATIONS

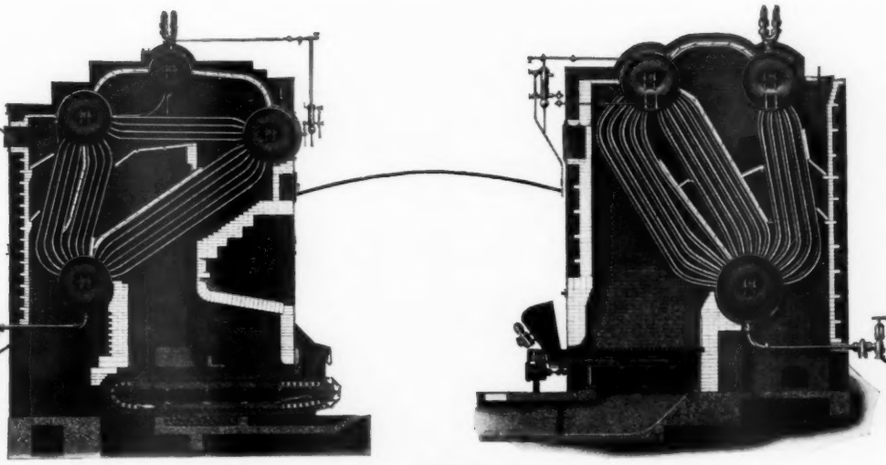
A general conference of furnace oil manufacturers, distributors and consumers is being called by Harry H. Steidle of the United States Department of Commerce, January 9, in New York City to consider the adoption of a commercial standard for furnace oils and fuel oils. The meeting will be held in the Pennsylvania Hotel and the general invitation to attend asks that Mr. Steidle be informed of names of those intending to be present so arrangements may be made in advance.

Accompanying the invitation is a summary of specifications to be considered as the basis for the suggested standard. These have been under consideration for some time and similar specifications have met the approval of the burner manufacturers. Following are the suggested specifications which will be discussed:

Grade—	Flash Pensky-Martens' Closed cup °F.	Maximum pour-point °F.	Maximum B.S.&W.	Distillation range	Maximum viscosity
No. 1 light furnace oil	110-165	0	.05%	At least 10% over at 420°F. Maximum endpoint 600°F.	
No. 2 medium furnace oil	125-190	0	.05%	At least 10% over at 440°F. At least 90% over at 620°F.	
No. 3 heavy furnace oil	150-200	0	.1%	At least 10% over at 460°F. At least 90% over at 675°F.	55 at 100°F. Saybolt Universal
No. 4 light fuel oil	150-250	15	1.0%		125 at 100°F. Saybolt Universal
No. 5 medium fuel oil	150 (Min.)	..	1.0%		100 at 122°F. Saybolt Furol
No. 6 heavy fuel oil	150 (Min.)	..	2.0%		300 at 122°F. Saybolt Furol

The test methods used as a basis for these specifications are as follows:

1. Flashpoint:
Minimum—The instrument and method for determining minimum flashpoint shall be that legal for the locality in which the oil is sold. In absence of legal requirements the minimum flashpoint shall be determined in accordance with the standard method of test for flashpoint by means of the Pensky-Martens closed tester. (Serial designation D-93.)
Maximum—Standard method of test for flashpoint by means of the Pensky-Martens closed tester. (Serial designation D-93.)
2. Water and sediment:
Standard method of test for water and sediment in petroleum products by means of centrifuge. (Serial designation D-96.)
3. Pourpoint:
Tentative method of test for pourpoints of petroleum products. (Serial designation D-97—27-T.)
4. Distillation Test:
Standard method of test for distillation of gasoline, naphtha, kerosene and similar petroleum products. (Serial designation D-86.)
5. Viscosity:
Standard method of test for viscosity of petroleum products and lubricants. (Serial designation D-88.)



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Because of their efficiency, even at high rating, they are recognized by leading engineers and installed in many modern power plants.

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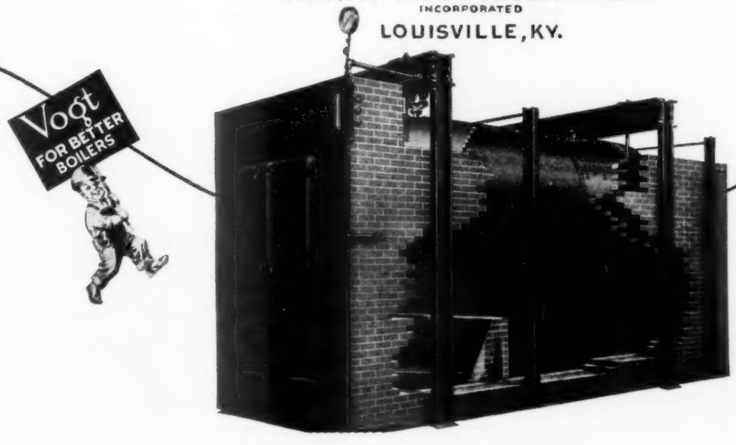


Specific Gravity of Liquefied Gas

Develop Method and Apparatus for Use in Plant Control and for Determining Loading Densities of Shipments

By G. G. Oberfell, T. W. Legatski and F. E. Fisher*

Interstate Commerce Commission regulations for transportation of liquefied petroleum gas require that the liquid portion of the gas must not completely fill the container at temperatures of 105 degrees Fahrenheit and 130 degrees Fahrenheit for regulation tank cars and cylinders respectively. Recent investigations carried out under the supervision of the Bureau of Explosives have shown that when a shipper knows accurately the specific gravity of his material at 60 degrees Fahrenheit he can determine the proper loading density to use. The filling densities for liquefied petroleum gas which meet the requirements that the liquid portion of gas must not completely fill the tank at 105 degrees Fahrenheit, are presented in the table immediately following.

Filling Densities for Liquefied Petroleum Gases

Specific gravity of liquid gas at 60° F.	Maximum filling density, per cent of water weight capacity of tank
.509	46.5
.510	46.5
.514	47.0
.518	47.5
.522	48.0
.527	48.5
.531	49.0
.535	49.5
.540	50.0
.544	50.5
.549	51.0
.553	51.5
.557	52.0
.561	52.5
.566	53.0
.571	53.5
.575	54.0
.580	54.5
.585	55.0

The testing method as herein described was developed by the Phillips Petroleum Co. for determining densities of liquefied petroleum gases for use in plant control work and for determining loading densities for liquefied petroleum gas shipments.

Apparatus

A. Specifications:

1. The Bomb.—The bomb (Plate No. 1) consists of a steel cylinder approximately 3 inches in diameter and 12 inches long, finished both inside and outside. It is equipped with two liquid eduction pipes, one-eighth inch in diameter, which pipes are fitted into one end of the bomb as shown and terminate within one-eighth inch of the other end of the bomb. The exposed ends of the eduction pipes are fitted with one-eighth inch brass needle valves of dependable construction. A one-fourth inch by three-fourths inch heavy steel collar made up flush with the inside face of the same head completes the bomb. As a protection from rust, the entire outer surface of the apparatus is covered with a thin coat of nickel plate. The bomb is finally equipped with an accurate pressure gauge registering up to 500 pounds per square inch. All threaded connections are made up permanently with a mixture of litharge and glycerin. The finished bomb should be absolutely leak proof.

2. Connections, Accessories, etc.—A 2 or 3-foot length of one-fourth inch diameter metallic flexible hose will be required for the sampling operation. If not available, one-fourth inch O.D. copper tubing will be found to answer almost equally well.

3. Water Bath.—The water bath shall be of such dimensions that the bomb may be immersed up to the valves. It should be provided with an agitator and with both heating and cooling coils to facilitate maintaining a temperature of exactly 60 degrees Fahrenheit.

4. Thermometers.—The thermometers for determining the temperature of the water bath shall conform to the following specifications: (See A.S.T.M. method D.56-21.)

Type: Etched stem, glass.

Total length: 275 millimeters.

Stem: Plain front, enamel back, suitable thermometer tubing; diameter, 6 to 7 millimeters.

Bulb: Corning normal, Jena 16 III, or equally suitable thermometric glass; diameter, less than stem; length, 9 to 13 millimeters.

Actuating liquid: Mercury.

Range: 20 degrees Fahrenheit to 230 degrees Fahrenheit.

Immersion: Total.

Distance to 20-degrees line from bottom of bulb: 75 to 90 millimeters.

Distance to 230-degree line from top of stem: 25 to 40 millimeters.

Expansion chamber: Required.

Graduation: All lines, figures and letters clear cut and distinct; scale graduated in 1-degree divisions; scale numbered every 10 degrees, the first and each succeeding 5-degree line to be longer than the others.

Special markings: "A.S.T.M., P.M., and Tag," serial number, manufacturer's name or trade-mark etched on the stem.

Accuracy: Error at any point in scale shall not exceed 1 degree Fahrenheit.

Points to be tested: 32 degrees, 100 degrees, 150 degrees, 212 degrees Fahrenheit.

The thermometer should be checked for accuracy before being put in service.

5. Balances and Weights—The balance used for the determination should be of fairly rugged design, preferably a torsion balance with a capacity of from 10 to 15 pounds, and should be accurate to .001 of a pound. The weights used should be of equal accuracy and should be checked periodically for wear.

B. Calibration:

1. Tare Weight.—To determine the tare weight, the bomb is thoroughly cleansed by repeated rinsing with liquefied gas. The bomb is then submersed in a hot water bath and is evacuated as completely as possible. This operation may have to be repeated several times in order to vaporize the last trace of moisture present in the apparatus. The bomb is then dried and is weighed full of air to the nearest .001 of a pound. This value should be checked for accuracy in cases where a new piece of apparatus is being put into service.

2. Water Weight Capacity at 60 degrees Fahrenheit.—The bomb is connected to the vacuum pump in the manner shown in Plate No. 2, which makes it possible to completely fill it with distilled water. The procedure is to evacuate as completely as possible and then crack the inlet valve to allow the water to be drawn in until the bomb is completely full. The inlet valve is then closed and further pumping is done to remove the small amount of air which remains. The valve between the vacuum pump and the bomb is then closed and the valve on the water line is opened to allow the last bit of water to flow into the bomb. After closing the water line valve, the apparatus is disconnected and the bomb is placed in an upright position. A funnel constructed from a 1 inch to one-eighth inch reducer and short nipples is made up to one of the valve outlets. It is filled with distilled water after which the valve below it is opened and the bomb is submersed in an ice bath.

The valve is closed after sufficient time has elapsed for the contents to arrive at the temperature of the bath. This will require at least an hour. The apparatus, after being disconnected, is held in an accurately controlled 60-degree Fahrenheit water bath until it comes to temperature. The excess pressure over 100 pounds which builds up due to expansion is relieved by cracking one of the valves. When equilibrium is reached, which will usually be complete in an hour, the apparatus is removed from the bath, is dried and weighed to the nearest .001 of a pound. The tare weight previously determined is subtracted from the total weight obtained above which gives the resultant water weight capacity at 60 degrees Fahrenheit. This value should be stamped on the apparatus.

Plate 1—Specific gravity bomb for volatile liquids. Photo by courtesy of Refinery Supply Co.

C. Checking for Accuracy, etc.:

The bomb, although constructed in such a manner as to insure almost constant volume and tare weight, will nevertheless change in long service. For this reason, the volume or water weight capacity and also the tare weight should be checked as often as the service warrants. The balances used should be inspected before every determination and should also be checked for accuracy as often as conditions warrant. What has been said for balances also applies to weights. These should be checked against standard weights as often as necessary.

Test Procedure

A. Purging.—The bomb is attached by means of one-fourth inch diameter flexible tubing or one-fourth inch O.D. copper tubing to the source of supply and is partially filled with liquid. Without disconnecting, the inlet valve to the bomb is then closed and the air or vapors from previous determinations are purged from the bomb by holding same in an inverted position with the discharge valve open. After most of the contents have boiled away, the position of the bomb is re-

(Continued on Page 158)

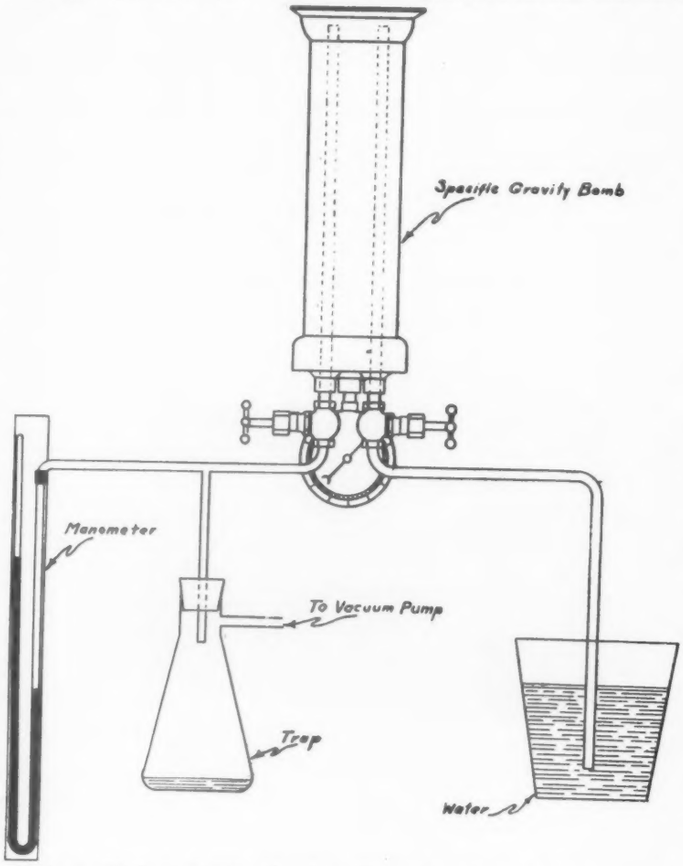
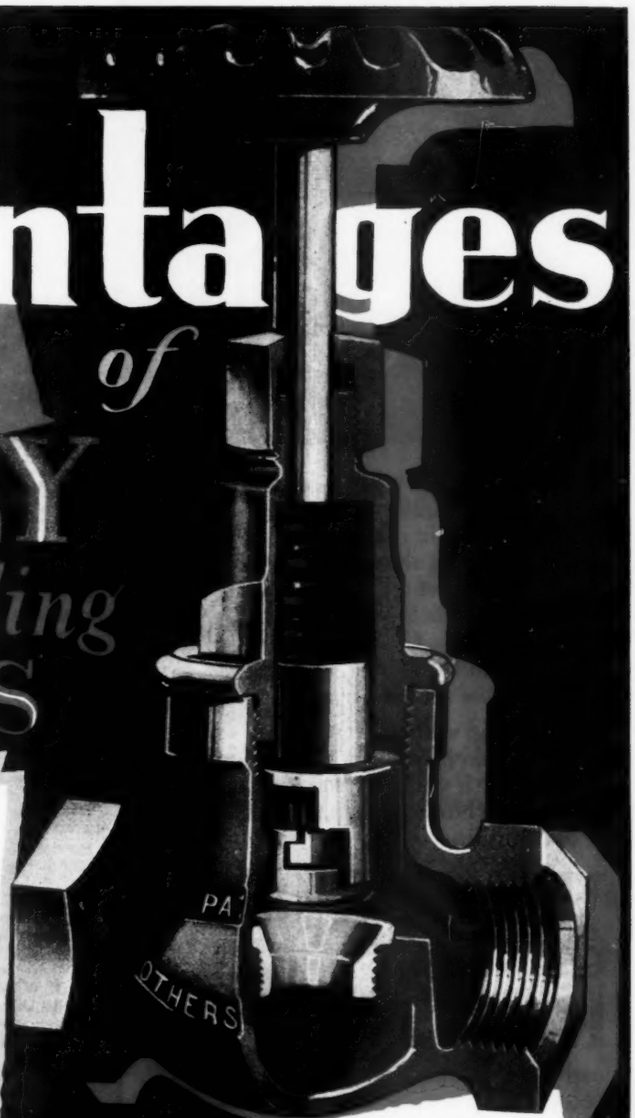


Plate 2—Method of filling bomb to determine water weight capacity.

*Research department, Phillips Petroleum Co.

advantages of KELLY Self-Grinding VALVES



Each constitutes a distinct improvement. Take the self-grinding feature, for instance. All valves are alike in that they leak when the seat and disc are coated with accumulated scale and sediment. Kellys, on the contrary, automatically grind and clean seats and discs under pressure, every time they are opened or closed. This all-important metal-to-metal contact means that

Kellys Are...Always Tight... Always Clean...Always New!

Add 10 other important features and you know why Kellys give unmatched, leak-proof service. Every valve user should know these 11 advantages. ..... Return coupon for complete information.

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Gentlemen—Please send me full information on your Kelly Self-Grinding Valves.

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Firm _____
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Look at any sunbeam and you will SEE dust. Study scientific charts and you'll find that each cubic inch of unfiltered air contains about 100,000 particles of dust—that with each million cubic feet of unfiltered air you compress you *Also Compesss About a Half-pound of Grit and Abrasive Matter.*

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Dirt and grit contacting with the smooth reciprocating parts of air-using machines and tools sounds the death warning to efficiency. It builds up destructive carbon deposits. And it guarantees frequent overhauling.

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remove this costly foreign matter. This simple device is guaranteed to deliver air 99 9/10% CLEAN. It increases operating efficiency by cutting carbon as much as 70%. It reduces wear on moving parts by as much as 85%. And it enables you to operate pneumatic equipment three to five times longer without stopping for overhauling.

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Delivers clean, dry air, free from dust, water, oil, rust and scale, for paint spraying, compressed-air tools, hoists, cleaning operations, agitating liquids, etc.

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NEW LOCATIONS IN TEXAS PANHANDLE AND NORTH AND WEST TEXAS FIELDS

TEXAS PANHANDLE

Gray County

Malone et al's No. 1 W. H. Taylor, 990 feet south and east of the NW cor. of the NW of Section 22, Block B-2, H.&G. N. Marland Production Co.'s No. 1 M. K. Brown-Finley, 330 feet south and west of the NE cor. of Section 32, Block B-2, H.&G.N.

Hutchinson County

Phillips Petroleum Co.'s No. 5 Johnson Brothers-Barnum, 990 feet north and 330 feet west of the SE cor. of the east 80 acres of the south 160 acres of the north 400 acres of Section 64, Block 46, H.&T.C. Same company's No. 5 J. M. Sanford-Garland, 330 feet north and east of the SW cor. of Section 77, Block 46, H.&T.C. Same company's No. 4 J. M. Sanford-Garland, 990 feet north and 330 feet west of the SE cor. of the W half of the south 160 acres of Section 77, Block 46, H.&T.C. Same company's No. 15 J. A. Whittenburg, Section 63, 990 feet south and 330 feet east of the NE cor. of the south 400 acres of Section 64, and located in Section 63, Block 46, H.&T.C.

Wheeler County

Martin & Dubous' No. 1 I. Close, 300 feet south and 660 feet west of the NE cor. of the NE of the SE of Section 82, Block 23, H.&G.N. Upham Gas Co.'s No. 1 T. E. Trostle, C of S half of the NE of the SW of Section 130, Block 23, H.&G.N. Wisch Kamper's No. 2 Wisch Kamper, 175 feet north and 164 feet east of the SW cor. of the NE of the SW of Section 80, Block 23, H.&G.N.

NORTH CENTRAL AND WEST TEXAS

Archer County

Archer Drilling Co.'s No. 1 J. R. Roberts and others, 150 feet south and 650 feet west of the NE cor. of Lot 15, Section 100, A.T.N.C.L. C. E. Beaver's No. 1 J. H. Turbeville, 150 feet south and east of the NW cor. of the south 30 acres of the north 60 acres of the east 80 acres of Section 161, R. Carson Survey, A-87. F. Payne and others' No. 6 Mrs. J. E. Parrish, 550 feet north and 150 feet east of the SW cor. of their 30-acre lease out of the S half of Section 2, S.P.R.R., A-1,004. F. P. Rose and others' No. 1 T. B. Wilson, 450 feet north and 150 feet west of the SE cor. of the south 40 acres of the north 60 acres of the east 100 acres of the west 122 acres of the T. B. Wilson 722-acre tract and located in the D.L.&C. Co. Survey.

Stump & Co.'s No. 1 H. Ford, 3,314 feet south and 3,309 feet east of the NW of the W. Bryan Survey No. 4, A-35. A. A. Brashear and others' No. 1 S. M. J. Benson, 150 feet north and 330 feet east of the SW cor. of the east 80 acres of the north 120 acres of the south 240 acres of Section 1,808, T.E.&L. F. C. Grebin's No. 1 A. M. Henning, 150 feet north and west of the SE cor. of the north 100 acres of Section 21, G. P. Meade Subdivision, L. M. Pasture. Prairie Oil & Gas Co.'s No. 3 J. T. Richardson-E, 450 feet north and 150 feet west of the SE cor. of Section 8, South Anderson Ranch Subdivision.

Brown County

E. D. Davis and others' No. 1 Mrs. E. Thompson and others, 150 feet north and east of the SW cor. of the E. Thompson and others' 384.5-acre tract out of the Edmund Pruett Survey No. 135. Humble Oil & Refining Co.'s No. 28 Roy Hickman, 664 feet north and 920 feet west of the SE cor. of their lease out of the T. Benson Survey No. 783. Same company's No. 17 J. T. Hodnett-A, 895 feet south and 600 feet east of the NW cor. of their "A" lease out of the Mrs. J. M. Harris Survey No. 784. Young Brothers-Alexander & Woodley Petroleum Co.'s No. 17 Roy Hickman, 405 feet north and 937 feet east of the SW cor. of their 80-acre lease out of the Thomas Benson Survey No. 783. W. I. Bettis and others No. 1 E. A. Merritt, 3,330 feet southwest of the northeast line and 2,400 feet southeast of the northwest line of the J. Redman Survey No. 210. Brock and others' No. 1 Mrs. Trapp, 300 feet northwest of the southeast line and 200 feet northeast of the southwest line of the Mrs. Trapp 12-acre tract out of the William H. Irion Survey No. 52, A-537. Denninger and others' No. 1 W. A. Prater, 300 feet northwest of the southeast line and 250 feet southwest of the northeast line of the W. A. Prater 94-acre tract out of the J. S. Thom Survey No. 53, A-897.

Callahan County

The Texas Company's No. 13 P. G. Hatchett, 767 feet south and 150 feet east of the NW cor. of the NE of the NW of Section 29, Deaf & Dumb Asylum Land.

Coleman County

W. L. Jackson's No. 1 H. and D. Thate, 150 feet south and east of the NW cor. of the east 76 acres of Section 26, Comal County School Land No. 181. Jamison & Pollard's No. 1 H. Thate, 1,638 feet north and 210 feet east of the SW cor. of the H. Thate 257.5-acre tract out of the George Eubanks Survey No. 173. J. Pearce and others' No. 1 B. W. Webb, 1,901 feet north and 3,969 feet west of the SE cor. of the Victoria County School Land No. 187. Richardson-Jones and others' No. 1 J. D. Horn, C of the NE of the A. S. Robinson Survey, A-811. E. J. Cunningham and others' No. 6 G. W. and L. P. Jennings-A, 200 feet north and 150 feet east of the SW cor. of their "A" lease out of the A. S. Lipscomb Survey No. 94.

Cooke County

W. E. Benson and Shell Petroleum Corp.'s No. 1 E. Ball, 2,900 feet north and 1,383.5 feet west of the most easterly SE cor. of the M. Hunt Survey, A-449, being 629.5 feet south and 1,383.5 feet west of the NE cor. of their 80-acre lease. Parkening & Brownfield's No. 1 Mrs. J. P. Rudd, 450 feet north and 619.4 feet east of the SW cor. of the Mrs. J. P. Rudd 34.5-acre tract out of the G.H.&H. Survey No. 1, A-433.

Crane County

C. C. Duffey and others' No. 4 Cowden Brothers & Co., 1,320 feet north and 440 feet east of the SW cor. of Section 18, Block "X," C.C.S.D.&R.G.N.G.R.R. Co. Survey.

Eastland County

Garrett & Moore and others' No. 1 W. A. Dalberry, 150 feet south and east of the NW cor. NE Section 10, Block 2, H.&T.C. Survey. H. B. Mays and others' No. 2 W. G. Williamson, 510 feet north and 150 feet west of the SE cor. SW NE Section 11, Block 4, H.&T.C. Survey. G. W. Price and others' No. 2 O. E. Holcombe and others' 623-acre tract out of the J. House Survey.

Erath County

Associated Producers Co.'s No. 1 W. B. Cary, 200 feet south and west of the most southerly NW cor. of the J. W. Conway 387.5-acre tract and located on the W. B. Cary 199-acre tract out of the J. M. Espinosa Survey. Same company's No. 1 J. Evatt, 200 feet north and east of the SW cor. of the J. Evatt 59-acre tract out of the J. M. Espinosa Survey. Hickery Oil & Gas Co.'s No. 2 J. E. Smith, 600 feet north and east of the SW cor. of the J. E. Smith 824-acre tract out of the Thomas Stubblefield Survey. Peters and others' No. 1 J. B. Moring, 400 feet south and west of the NE cor. of the J. B. Moring 221-acre tract out of the Moses Goff Survey. H. J. Wickens and others' No. 1 J. E. Smith, 540 feet north and east of the SW cor. of the east 80 acres of the south 240 acres of the J. E. Smith 497-acre tract out of the Thomas Stubblefield Survey.

Fannin County

Scrivner & Honea's No. 1 J. A. Griffis, 4,861 feet north and 150 feet west of the SE cor. of the J. A. Windle Survey, A-1,147.

Glasscock County

The California Co.'s No. 1 W. R. Settles, 2,310 feet north and west of the SE cor. of Section 158, Block 29, W.&N.W.R.R. Survey.

Grayson County

Price-Eldridge and others' No. 1 R. H.

Bronze
Double Disc Gate Valve
Inside Screw, Rising Stem
150 lb. W. S. P.
Screw or Flange Ends

Bronze
Wedge Disc Gate Valve
Inside Screw, Stationary Stem
200-300 lb. W. S. P.
Screw or Flange Ends

Bronze
Wedge Disc Gate Valve
Outside Screw, Rising Stem
200-300 lb. W. S. P.
Screw or Flange Ends

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are being relied upon in thousands of plants—in practically every industry—to economically control the flow of steam, liquids, oil and gas.

Unusually long service life with low maintenance expense has convinced this host of users that Lunkenheimer Bronze Gate Valves are efficient allies in the continuous battle for lower operating costs.

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The Wedge Disc type has a single disc, double seated. Seat rings are renewable in sizes 1 inch and larger.

Discs in all patterns are accurately guided by ribs cast integral with body. Stuffing boxes are repackable under pressure with valves wide open.

If you want to know more about Lunkenheimer Bronze Gate Valves, fill in and mail the coupon. Or the better way is to purchase one or more of these valves from the Lunkenheimer Distributor in your locality. Try them out and learn from an actual service test the advantages of standardizing on "Lunkenheimer".

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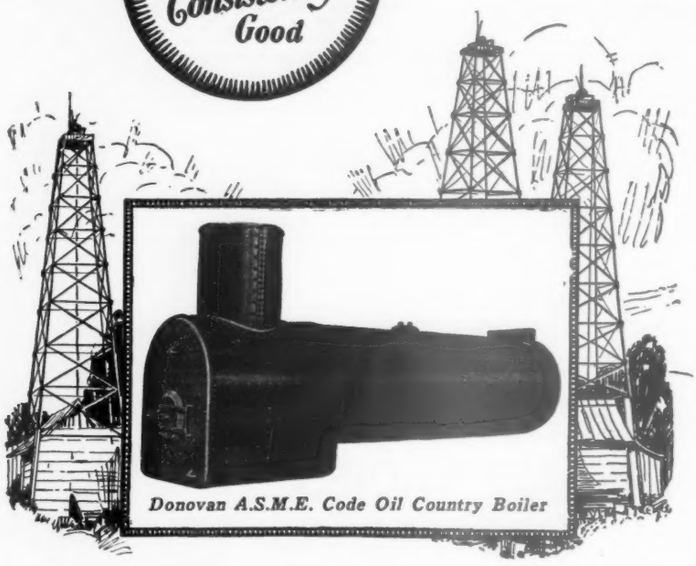
Donovan Boilers are Consistently Good



Donovan A.S.M.E. Code Oil Country Boiler

The Easiest Steamers Made

In West Texas, are two 85 H.P. 175-lb. DONOVAN boilers on one rig. They have been running steadily for months under very trying conditions without expense or delay. The fireman has this to say:

"These are the first DONOVANS we have used and they are the easiest steaming boilers I have ever had. Another fellow on this same gas line has the valve wide open and is always fighting for 150 lbs. of steam.

"I have this valve one-third open and the boilers are popping off at 200 lbs. all the time. I never have to fire them hard and they sure deliver the fog."

As a result of this experience, the contractor bought DONOVANS to go with his latest new rig.

To try them is to stay with them.

Manufactured by

DONOVAN BOILER WORKS, INC.
PARKERSBURG, W. VA.

NEW YORK OFFICE—30 Church Street
FRICK-REID SUPPLY CORPORATION
Mid-Continent and Eastern Distributors
GREAT NORTHERN TOOL & SUPPLY CO.
MIDLAND IRON WORKS
Montana Distributors

All Leading Supply Houses Throughout the Eastern Fields Handle

DONOVAN QUALITY PRODUCTS
NONE BETTER

Jewell, 150 feet south and west of the NE cor. of the Thomas Toby Survey, A-1,249.

Howard County

Sun Oil Co.'s No. 6 W. R. Settles, 915 feet north and 330 feet west of the SE cor. of Section 135, Block 29, W.&N.W. R.R. Survey.

Jones County

Phillips Petroleum Co.'s No. 1 Joe Winters-W. Joe, 330 feet south and east of the NW cor. Section 19, Block 19, T.&P. Survey.

Loving County

Lockhart & Co.'s No. 1 H. L. Lepp, 330 feet northwest of the southeast line and 330 feet northeast of the southwest line of Section 3, Block 2, W.&N.W.R.R. Survey.

Mitchell County

Simms Petroleum Co.'s No. 1 I. L. Ellwood, C SE Section 29, Block 18, S.P.R.R. Survey.

Montague County

Pure Oil Co.'s No. 10 L. Keck-A, 1,410 feet north and 650 feet east of the most westerly SW cor. of their "A" lease out of the William Donoho Survey, A-178. Pure Oil Co.'s No. 11 L. Keck-A, 960 feet north and 650 feet east of the most westerly SW cor. of their "A" lease out of the William Donoho Survey, A-178.

McCulloch County

McLean & Jamison's No. 3 E. M. West, 300 feet south and 1,000 feet east of the NW cor. of the H.&T.C. Survey No. 155.

Palo Pinto County

Atlantic Oil Producing Co.'s No. 1 J. N. Stuart, 250 feet south and east of the NW cor. SE Section 50, Block 4, T.&P. Survey. J. E. Merritt's No. 1 F. Hill, 160 feet north and 130 feet east of the SW cor. of Section 70, Burleson County School Land, League 3 (shown as C. Felts, W. S. Granes and R. M. Laflin). H. J. Wickens and others' No. 1 E. J. Hart, 3,500 feet north and 4,500 feet west of the SE cor. of the Abner Ashworth Survey, A-1, being 300 feet south and 600 feet east of the NW cor. of the E. J. Hart 132-acre tract.

Pecos County

Mid-Kansas Oil & Gas Co.'s No. 27 I. G. Yates-B, 250 feet north and 845 feet east of the NW cor. Section 60, and located in Section 61, Block 1, I.&G.N. Survey. Same company's No. 12 I. G. Yates-C, 811 feet south and 871 feet east of the NW cor. Section 60, Block 1, I.&G.N. Survey.

Reagan County

The California Co.'s No. 5 University Land, 2,310 feet south and west of the NE cor. Section 16, Block 7, University Land.

Reeves County

Lee O. White and others' No. 1 Kloh & Rumsey, 660 feet south and east of the NW cor. Section 5, Block 51, Township 10, T.&P. Survey.

Shackelford County

Atlantic Oil Producing Co.'s No. 1 W. H. Green, 1,830 feet north and 150 feet west of the SE cor. of Section 62, Block 12, T.&P. Survey. Marland Production Co.'s No. 1 C. Flippin, 150 feet north and east of the SW cor. Section 30, Block 11, T.&P. Survey. Midwest Exploration Co.'s No. 3 J. F. Dyer, 633 feet south and 657 feet west of the NE cor. Section 85, Block 12, T.&P. Survey. Roeser & Pendleton's No. 31 W. I. Cook-A, Section 61, 150 feet north and 973 feet east of the SW cor. NW SW Section 61, Block 10, E.T.R.R. Survey. Same company's No. 12 W. I. Cook-A, Section 62, 1,247 feet south and 220 feet east of the NW cor. SW Section 62, Block 10, E.T.R.R. Survey.

Stephens County

Cranfill & Reynolds' No. 1 J. P. Morris, 750 feet south and 150 feet west of the NE cor. NE NW Section 64, Block 6, T.&P. Survey.

Sutton County

Phillips Petroleum Co.'s No. 1 Cawthorn, 330 feet south and east of the NW cor. of Section 17, C.C.S.D.&R.G.N.G. R.R. Co. Survey.

Wichita County

G. W. Clark's No. 3 Allen & Kemp, 1,200 feet north and 1,450 feet west of the SE cor. of Lot 19, Block 26, Kemp Wichita Valley Land. C. W. Clark's No. 4 Allen & Kemp, 1,100 feet north and 1,000 feet west of the SE cor. of Lot 19, Block 26, Kemp Wichita Valley Land. Holbrook & Wood's No. 28 Kemp & Kempner, 1,050 feet south and 1,450 feet west of the NE cor. of Block 82, Kemp Wichita Valley Land. Humble Oil & Refining Co.'s No. 5 W. H. Taylor, 150 feet north and west of the SE cor. of Block 81, Kemp Wichita Valley Land. Panhandle Refining Co. & Hines' No. 4 T. L. Burnett and others, 150 feet north and west of the SE cor. of the S half of the SW Section 6, S.A.&M.G. Survey, A-464. United Producers Co.'s No. 6 W. L. Hodges-A, 150 feet north and east of the SW cor. of the W. L. Hodges 214-acre tract out of Section 1, H.T.&B. Survey, A-139.

Upton County

Humble Oil & Refining Co.'s No. 10 R. Ricker, 2,310 feet southwest of the northeast line and 3,280 feet southeast of the northwest line of Section 5, Mary S. Denton Survey, A-127.

Regal Oil Co. & Clark's No. 1 N. H. Martin, 400 feet north and 1,150 feet east of the NW cor. of the Sam O. Fowler Survey A-78, and located in the W. R. Eaves Survey, A-753. Same company's No. 2 N. H. Martin, 450 feet north and 1,175 feet east of the NW cor. of the Sam O. Fowler Survey, A-78, and located in the W. R. Eaves Survey, A-753. Staley & Wynne's No. 9 Kemp & Kempner, 150 feet south and west of the SE cor. of Plock 81, and located in Block 82, Kemp Wichita Valley Land.

Wilbarger County

Archer Drilling Co.'s No. 1 W. T. Waggoner, 150 feet north and west of the SE cor. of Section 49, Block 4, H.&T.C. Consolidated Oil Co.'s No. 1 W. T. Waggoner-L, 150 feet south and west of the NE cor. of the NW of the NW of Section 49, Block 4, H.&T.C. Waggoner Refining Co.'s No. 7 W. T. Waggoner-I, 505 feet north and 889 feet east of the SW cor. of Section 33, Block 4, H.&T.C. Wanderer Oil Co.'s No. 1 W. T. Waggoner, 150 feet north and east of the SW cor. of the SE of the SW of Section 7, Block 5, H.&T.C.

Winkler County

Humble Oil & Refining Co.'s No. 3 T. G. Hendricks-C (No. 2), 1,320 feet south and 330 feet east of the NW cor. of Section 10, Block B-12, School Land. Texas-Canadian Oil Co.'s No. 1 Kloh & Rumsey, 1,320 feet north and east of the SW cor. of Section 35, Block 46, Township 1n, T.&P.

Young County

P. F. Gwynn's No. 2 H. D. Kunkel-C, 150 feet north and 450 feet west of the SE cor. of his 14-acre lease "C" out of Section 4, B.B.B.&C. Survey. Holbrook & Wood's No. 4 R. L. Watson-B, 450 feet north and east of the SW cor. of the NE of Section 22, Young County School Land, A-1,284. Same company's No. 5 R. L. Watson-B, 150 feet north and 660 feet east of the SW cor. of the NE of Section 22, Young County School Land, A-1,284. King Royalty Co.'s No. 13 B. Hawkins, 1,050 feet south and 450 feet west of the NE cor. of Section 1,914, T. E.&L. Pennell Oil Co. and others' No. 1 J. R. Cox, 750 feet south and 150 feet west of the NE cor. of the J. R. Cox 80-acre tract out of the S. Tynes Survey, A-274. Pennell & Holcombe's No. 1 J. W. Jones, 150 feet north and east of the SW cor. of the E half of the J. W. Jones tract out of the S. Sallie Survey, A-252. Petroleum Producers Co.'s No. 4 L. Parrish-A, 150 feet south and west of the NE cor. of the S half of the west 40 acres of the SW of Section 409, T.E.&L. Petroleum Producers Co.'s No. 2 L. Parrish-B, 450 feet north and 1,049 feet east of the SW cor. of Section 409, T.E.&L. Prairie Oil & Gas Co.'s No. 5 R. Campbell, 1,200 feet south and 1,800 feet west of the NE cor. of Section 1,370, T.E.&L. L. V. Ulrey's No. 1 H. T. Barrett, 150 feet south and east of the NW cor. of the south 100 acres of the W half of Section 453, T.E.&L. E. W. Walton and others' No. 1 E. R. Prideaux, 730 feet south and 150 feet east of the NE cor. of the J. C. C. Edwards 100-acre tract and located on the E. R. Prideaux 126-acre tract out of the S. Tynes Survey, A-274. Nash & Windfohr's No. 1 J. Ware-B, 150 feet north and 646 feet east of the SW

SPANG WELDLESS JARS

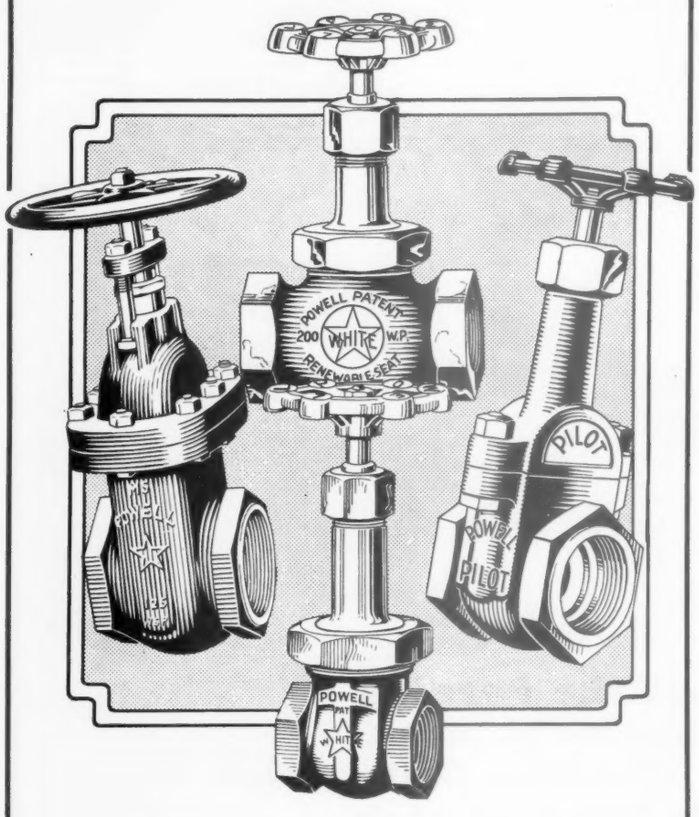
··· PROVEN BY THE TEST OF TIME ···

The Pinnacle of the Forging Art has been reached in the manufacture of Spang Weldless Drilling Jars—a single billet of high grade alloy steel shaped and finished into a Jar of super-strength.

Sold in over 300 supply houses throughout the petroleum world.

SPANG AND COMPANY

BUTLER **PENNA.**



Again in 1929

The same dependable line of Powell Valves with the same Powell guarantee!

Doubtless there is no feature in Powell Valves that has not been claimed for all others. And yet, there is only one Powell in the world of valves.

POWELL PRODUCTS include bronze, iron and steel valves; oilers, lubricators, grease cups, water and oil gauges, whistles, whistle valves, etc.

POWELL VALVES

THE WM. POWELL COMPANY
2525 Spring Grove Ave.
CINCINNATI, OHIO

cor. of the J. W. Manning Survey No. 36, A-188.

CORRECTED LOCATIONS
Week Ended December 19

In Brown County: Daniels and others' No. 1 W. A. Leslie, 150 feet north and 150 feet east of the SW cor. of the east 50 acres of the north 80 acres of the SE of Section 36, H.&T.C., A-1,999.

In Callahan County: The Texas Company's No. 12 P. G. Hatchett, 750 feet south and 750 feet east of the NW cor. of the NE of the NW of Section 29, Deaf & Dumb Asylum Land.

In Coleman County: The Texas Company's No. 3 T. M. Hays, 200 feet south and 3,563 feet west of the NE cor. of Bonds & Sanders Survey No. 93. Same company's No. 4 T. M. Hays, 200 feet south and 3,263 feet west of the NE cor. of Bonds & Sanders Survey No. 93.

In Erath County: Peters and others' No. 1 J. W. Conway, 350 feet south and 250 feet east of the most southerly NW cor. of the J. W. Conway 387.5-acre tract out of the Jose Maria Espinosa Survey.

In Shackelford County: Roeser & Pendleton's No. 2 W. I. Cook-A, Section 83, 831 feet south and 220 feet west of the NE cor. of the SE of Section 83, Block 10, E.T.R.R.

In Wheeler County: Wisch Kamper's No. 1 Wisch Kamper, C of NE of SW of Section 80, Block 23, H.&G.N. Hatcher and others' No. 1 J. Hatcher, C of SE of SW of Section 80, Block 23, H.&G.N.

In Wilbarger County: Fain-McGaha Oil Corp.'s No. 7 W. T. Waggoner-L, 1,950 feet south and 150 feet east of the NW cor. of their "L" lease out of Section 31, Block 4, H.&T.C. Easter Oil Co.'s No. 1 W. T. Waggoner-B, 1,100 feet south and 2,420 feet east of the NW cor. of Section 39, M.E.P.&P.

TO CORRECT EVILS OF MARKETING PRODUCTS

(Continued from Page 146)

oil companies, and "permits" them to bid for the privilege of having their gasoline and lubricating oils used. The "successful" oil company not only supplies motor fuel and lubricant to the flier free of charge, but also makes a substantial cash donation or hangs up a fairly large cash prize if more than one flier is participating in the event.

Thus far, the oil companies have been willing to expend this money, realizing that it was probably a good investment, not only because of its advertising value, but because of the contribution to the growth of aviation. Much of the novelty has now worn off in the aviation field, however, and aviation is developing into an actual business. While in terms of gallonage, aviation gasoline and lubricants are still but a small fraction of the industry's business, they nevertheless represent a constantly growing factor, and the big oil companies have now passed beyond the experimental stage in their production and sale of aircraft petroleum products.

Practically all of the large companies specializing in aviation gasoline and lubricating oils are identified with the Petroleum Section of the Aeronautical Chamber of Commerce.

ROBERTS AND SETTLES POOLS WILL BE PERMITTED 35,000 BBLS. DAILY

FORT WORTH, Tex., Dec. 29.—E. E. Andrews, umpire in the proration of the Roberts and Settles Pool production (Howard and Glasscock Counties) from the lime formations below 1,800 feet, has issued the following report on the result of 12 hours' gauging, which will stand as the proration from December 16, 1928, to January 16, 1929:

Producer and farm—	Section and block	Well No.	Daily potential 3,000-2,500	Allowance
Amerada Pet. Co.—Dora Roberts	137-B-29	1	1,392	1,183
Dora Roberts	137-B-29			
Dora Roberts	137-B-29			
California Oil Co.—Dora Roberts	137-B-29	1		
Cosden & Co.—Dora Roberts	129-B-29	*A1	493	419
Dora Roberts	129-B-29	*A2	190	190
Dora Roberts	129-B-29	*A3	400	340
Dora Roberts	129-B-29	A4	1,335	1,134
Dora Roberts	157-B-29	*D1	1,040	884
Dora Roberts	157-B-29	D2		
Coyle-Concord—Dora Roberts	156-B-29	1	1,185	1,007
Superior Oil Co.—Dora Roberts	137-B-29	B2	500	425
Dora Roberts	137-B-29	B5	1,444	1,327
Dora Roberts	136-B-29	*C1	90	90
Dora Roberts	136-B-29	*D1	681	578
Dora Roberts	136-B-29	D-3	294	249
Dora Roberts	136-B-29	*D4	225	191
Dora Roberts	136-B-29	E2	227	192
Dora Roberts	136-B-29	E3		
Dora Roberts	136-B-29	E5	330	280
Dora Roberts	136-B-29	*E6	681	578
Dora Roberts	136-B-29	E7	1,169	993
Group 1 & Marland—W. R. Settles	158-B-29	*A2	1,248	1,060
W. R. Settles	158-B-29	A5	354	309
Henshaw Oil Corp—W. B. Settles	6-B-32	A1	5,232	4,447
W. B. Settles	6-B-32	B1		
W. B. Settles	6-B-32	C1	968	822
Henshaw Oil Corp.—W. B. Settles	6-B-32			
Louisiana Ref. Co.—W. B. Settles	6-B-32	1		
W. B. Settles	6-B-32	2		
Magnolia Pet. Co.—Dora Roberts	136-B-29	1	1,200	1,020
Dora Roberts	157-B-29	2	700	595
Dora Roberts	157-B-29	*3	150	150
Dora Roberts	157-B-29	*4	850	722
Dora Roberts	136-B-29	7	406	340
Dora Roberts	136-B-29	8	720	612
Dora Roberts	136-B-29	*9	500	425
Dora Roberts	136-B-29	*10	450	382
Dora Roberts	136-B-29	11	190	190
Dora Roberts	136-B-29	14		
Marland Oil Co.—Clay	136-B-29	E1	820	697
Marland Oil Co.—Dora Roberts	128-B-29	1	1,754	1,228
Merrick & Bristow—Dora Roberts	137-B-29	1	990	841
Dora Roberts	137-B-29	2		
Dora Roberts	137-B-29	3	1,164	989
Owen Sloan & Cosden—Dora Roberts	136-B-29	2	1,512	1,285
Dora Roberts	136-B-29	4	300	255
Dora Roberts	136-B-29	*5	840	714
Dora Roberts	136-B-29	6	1,540	1,309
Schermerhorn Oil Co.—Dora Roberts	157-B-29	*1)		
Dora Roberts	157-B-29	2)	2,104	1,788
Dora Roberts	157-B-29	*3)		
Dora Roberts	157-B-29	4		
Dora Roberts	157-B-29	A2	1,555	1,321
Sprague Oil Co.—Dora Roberts	156-B-29	1)	1,507	1,280
Dora Roberts	156-B-29	2)		
Dora Roberts	156-B-29	3		
Sun Oil Co.—W. R. Settles	137-B-29	1		
W. R. Settles	135-B-29	2	918	780
W. R. Settles	135-B-29	*3	525	446
W. R. Settles	135-B-29	4		
Taylor Link—W. H. Abrams	3-B-32	1	835	709
W. H. Abrams	3-B-32	2		
W. H. Abrams	3-B-32			

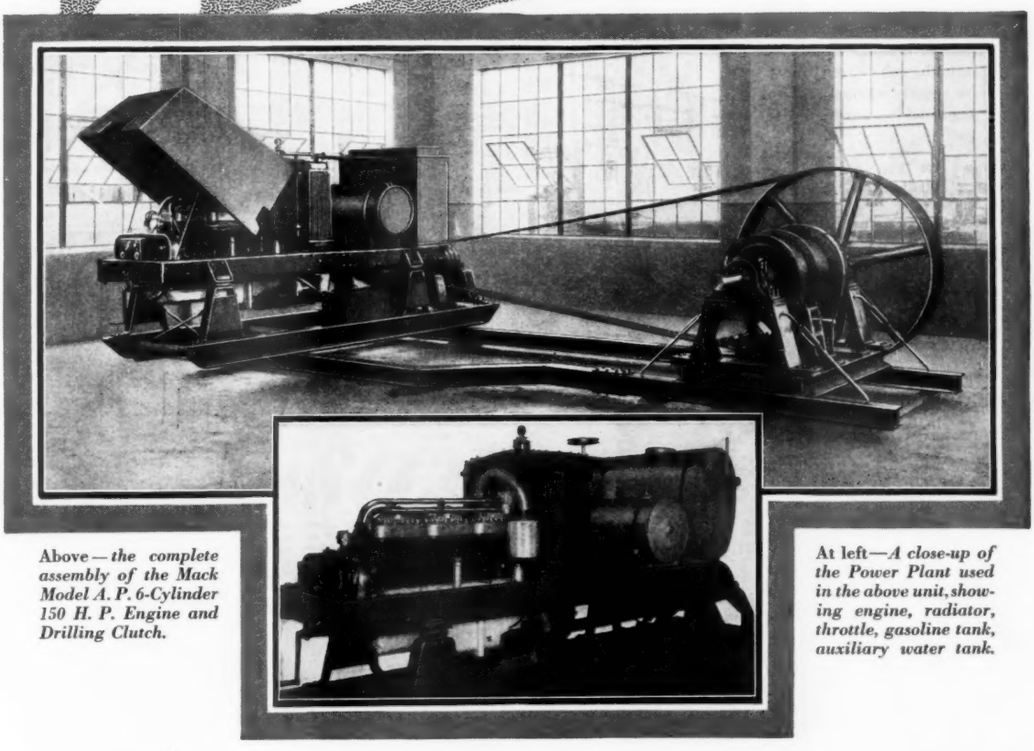
*Wells doing water and being treated 5 to 90 per cent.

The committee has authorized prorating the fields into 35,000 bbls. per day.

Mack

REG. U.S. PAT. OFF.

MODEL AP
150 HORSEPOWER ENGINE AND DRILLING CLUTCH



Above—*the complete assembly of the Mack Model A. P. 6-Cylinder 150 H. P. Engine and Drilling Clutch.*

At left—*A close-up of the Power Plant used in the above unit, showing engine, radiator, throttle, gasoline tank, auxiliary water tank.*

for Cable Tool Drilling

Just a glance at these specifications of the Mack Model A. P. Power Plant and Drilling Clutch will show a range of power and performance heretofore unobtainable in gasoline operated cable tool drilling units.

Units in operation can be inspected at Alpine, Texas; Yale, Oklahoma; Carter, Wyoming; Kevin, Montana and other oil fields. Entire power plant can be serviced at any one of more than 100 direct Mack Factory Branches.

Engine—Mack A. P. 6-Cylinder 150 H. P., Crankshaft counter-balanced and case hardened. Ignition Dual—battery and magneto. Fuel tank, capacity 60 gallons.

Cooling—Mack finned tube radiator. Air circulation by blower on flywheel. Capacity of radiator, 15 gallons. Capacity of auxiliary water tank, 136 gallons. Water circulation controlled by thermostat.

Transmission—Mack selective sliding gear, 4-speeds.

Speeds—

GEAR RATIO	R.P.M. of 16 in. Pulley	R.P.M. of 11 in. Band Wheel
Direct 1—1	1700	73
3rd 1—1.48	1160	50
2nd 1—2.73	623	26
1st 1—5.20	325	14

Rotary Pump—1¼ inch Rotary pump is furnished, driven by 2 inch belt from clutch shaft.

Equipment—Tachometer for engine speeds, electric starter, air cleaner, motometer, gasoline strainer, and oil filter.

Drilling Clutch—Diameter 24 inches, face 18 inches. Clutch shaft mounted on Timken Roller Bearings. Pulley 68 inch diameter, 13 inch face. Special brake for hitching over. Driving belt 12 inches–5 ply endless.

For further details write direct to

MACK-INTERNATIONAL MOTOR TRUCK CORPORATION

DENVER, COLO. BILLINGS, MONT. BUTTE, MONT. OKLAHOMA CITY, OKLA.
TULSA, OKLA. DALLAS, TEXAS FORT WORTH, TEXAS CASPER, WYO.

WRIGHT
HOIST
for uninterrupted, troubleless pipe laying—miles and miles of it—no fouling chain, just a smooth, unhampered hoist service—easily operated—absolutely dependable—never up for repairs.
Let us tell you all about its many exclusive features.
WRIGHT MANUFACTURING COMPANY
BRIDGEPORT, CONN.
ACCO
WRIGHT MANUFACTURING CO. BRIDGEPORT, CONN. MODEL 88 HOIST

CALIFORNIA OIL FIELD OPERATIONS FOR NOVEMBER, 192

According to figures collected by the American Petroleum Institute, Pacific Coast office, the total production of crude oil in California for November amounted to 19,907,526 bbls., an average of 663,584 bbls. per day. This is an increase of 36,778 bbls. per day over October production.

Total stocks of crude and all products in Pacific Coast territory increased during the month 1,269,491 bbls. The total stocks at the end of the month were 138,716,677 bbls. The total stock decrease for 1928, up to November 30, was 1,601,940 bbls. Comparative figures as of November 30, 1928, October 31, 1928, and November 30, 1927, are shown in detail here.

Sixty-three wells were completed during the month with an initial daily production of 65,774 bbls., compared with 44 wells completed during October with an initial production of 47,449 bbls.

PRODUCTION

(Figures of production and stocks are in barrels of 42 gallons)

District—	Barrels per month	Daily average Nov., 1928	Oct., 1928	Nov., 192
Kern River	543,694	18,123	11,144	22,483
Mount Poso	2,500	84	162	118
Fruitvale	32,448	1,082	968	.....
Round Mountain	1,366	46	102	50
McKittrick	146,009	4,867	4,865	5,017
Midway-Sunset	2,247,248	74,908	73,449	81,367
Elk Hills	586,454	19,549	20,366	24,806
Lost Hills-Belridge	129,711	4,324	4,070	3,843
Coalinga	305,253	10,175	10,510	19,182
Kettleman Hills	78,266	2,609	161	.....
Wheeler Ridge	25,183	840	860	960
Watsonville	1,875	63	62	58
Santa Maria	157,264	5,242	5,140	6,582
Summerland	3,648	122	121	121
Elwood-Goleta	251,827	8,394	2,463	280
Rincon	135,408	4,514	4,764	26
Ventura Avenue	1,560,494	52,017	54,246	52,384
Ventura-Newhall	172,794	5,760	5,036	6,100
Los Angeles-Salt Lake	46,360	1,546	1,545	1,696
Whittier	49,259	1,642	1,695	1,738
Fullerton (Brea Olinda)	471,586	15,720	15,707	16,036
Coyote	392,330	13,078	13,092	13,671
Santa Fe Springs	1,640,784	54,693	35,967	38,781
Montebello	325,181	10,840	11,114	12,542
Richfield	513,464	17,116	17,025	22,413
Huntington Beach	1,538,486	51,283	51,334	60,956
Long Beach	5,869,645	195,655	193,129	100,491
Torrance	471,029	15,701	16,182	20,493
Dominguez	309,672	10,323	10,320	14,071
Rosecrans	179,786	5,993	5,913	8,126
Inglewood	832,979	27,766	28,003	31,910
Newport	2,540	85	42	26
Seal Beach	874,609	29,154	26,972	49,988
Potrero	8,104	270	280	.....
Total	19,907,526	663,584	626,806	617,214
October	19,430,992	626,806		
Increase	476,534	36,778		

STOCKS

	Nov. 30, 1928	Oct. 31, 1928	Nov. stock increases	Nov. 30, 1927
Heavy crude, heavier than 20 degrees A.P.I., including all grades of fuel	99,772,153	98,449,077	1,323,076	95,212,430
Refinable crude, 20 degrees A.P.I., and lighter	17,243,243	17,323,160	*79,917	21,371,374
Gasoline	10,802,366	10,626,268	176,098	13,527,472
Naphtha distillates	1,480,812	1,285,014	195,798	2,039,755
All other stocks	9,418,103	9,763,667	*345,564	9,745,428
Total all stocks	138,716,677	137,447,186	1,269,491	141,896,359

*Decrease.

DEVELOPMENT

District—	New rigs up	Active drilling	Completed	Daily initial output	Active producing	Aband. wells— Drillers	Aband. wells— Producers
Kern River	5	6	3	745	1,223	1	..
Fruitvale	3	9	1	120	2	..	..
Mount Poso	6	7	..	.....	1	..	..
Round Mountain	1	3	2	725	2	..	..
McKittrick	..	1	..	.....	288	..	..
Midway-Sunset	8	13	6	1,089	2,519	..	3
Elk Hills	..	1	..	.....	212	..	..
Lost Hills-Belridge	5	2	5	103	310	..	..
Coalinga	..	..	..	.....	788	..	..
Kettleman Hills	1	1	..	.....	1	..	..
Wheeler Ridge	1	..	..	.....	24	..	..
Watsonville	..	..	..	.....	7	..	..
Santa Maria	..	5	..	.....	215	..	..
Summerland	..	1	..	.....	89	..	..
Elwood-Goleta	4	8	2	7,971	6	..	..
Rincon	1	8	1	175	24	..	..
Ventura Avenue	5	43	4	3,505	137	..	..
Ventura-Newhall	2	23	..	.....	523	1	..
Los Angeles-Salt Lake	..	..	..	.....	320	..	..
Whittier	..	..	..	.....	168	..	..
Fullerton	..	4	..	.....	378	..	..
Coyote	..	1	..	.....	209	..	..
Santa Fe Springs	30	217	6	25,651	295	..	..
Montebello	..	3	..	.....	179	..	..
Richfield	..	5	1	550	271	..	..
Huntington Beach	1	6	1	60	552	..	..
Long Beach	47	142	28	22,356	838	3	..
Torrance	..	..	..	.....	606	..	..
Dominguez	..	1	..	.....	69	..	..
Rosecrans	..	2	..	.....	102	..	..
Inglewood	1	1	..	.....	220	..	..
Newport	..	2	..	.....	1	..	..
Seal Beach	..	4	3	2,724	138	..	..
Potrero	..	3	..	.....	1	..	..
Miscellaneous drilling	8	117	..	.....	.....	6	..
November	129	639	63	65,774	10,721	11	3
October	84	638	44	47,449	10,704	4	7
Increase	45	1	19	18,325	17	7	*4
Average for year 1927	97	404	75	39,993	11,276	23	11
Average for year 1926	95	422	76	32,635	11,288	24	17
Average for year 1925	105	417	79	42,247	11,393	28	12
Average for year 1924	103	510	103	42,412	10,903	28	31
Average for year 1923	111	759	82	114,690	8,928	24	

*Decrease.

QUESTION LEGALITY OF CODE OF ETHICS

(Continued from Page 146)

way, so that you may know the exact question involved: Under this resolution, the clandestine violation of a rule adopted by a conference and approved by the commission becomes unlawful, although the practices prohibited by it are now lawful.

"The underlying principle is this: That a rule against action now perfectly lawful, when approved by the commission, has all the power of a statute enacted by Congress. The commission not only assumes the omnipotent power to make laws but also the power to enforce them. We are the legislature, the judiciary and the executive. We supersede Congress and the courts and the President. I hope that we have assumed these remarkable powers with becoming modesty and ho-

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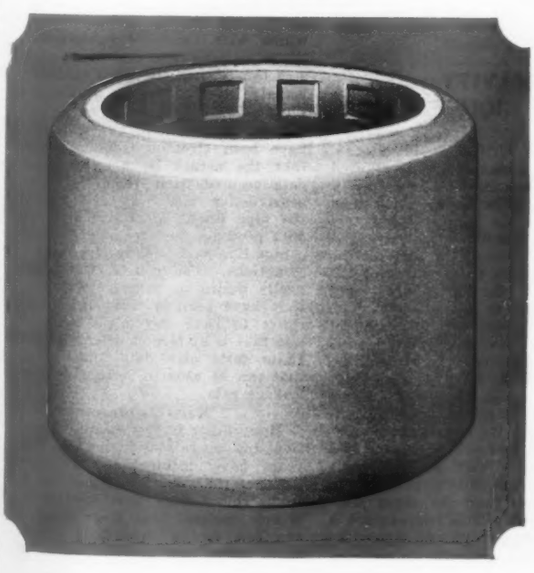

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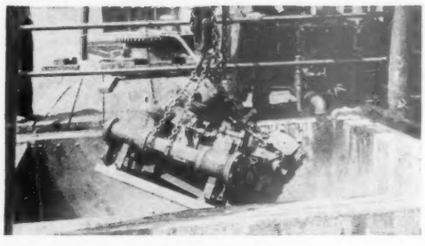

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mility. We have this advantage over Congress: we do not have to run the risk of having our legislation vetoed, nor is there any danger of disapproval being expressed at the polls.

"This action creates a new legislative body. It gives to acts of private citizens, when approved by the commission, all the force and dignity of congressional enactment. It makes the clandestine violation of a private contract an unfair method of competition. It makes what is a lawful practice in one industry, unlawful in another. It gives every industry the right to make its own laws. It creates a situation where what is lawful today may be unlawful tomorrow.

Absurd Position

"Like all propositions that are fundamentally unsound, follow it in any direction and it ends in absurdity. It makes it lawful for those who stay out of the conference to do certain things that it is unlawful for those who join the conference to do. It places a premium on the 'bushwhackers' and pirates of business. It gives special privileges to the very class that we desire to control and suppress. It gives to those who will not approve the action of a conference an unfair advantage over those who do.

"The majority in passing this resolution said there was doubt as to its legality. I think they are mistaken, I think those who voted for this resoiution stand alone in the doubting class. My judgment is that lawyers generally have no such doubt. This doubtful question, the majority says, should be speedily determined in the courts. But how can this be done? So far they have failed even to attempt to give an answer to that question. The majority places great emphasis on the word 'clandestine.' It is the clandestine violation of the rule that they claim makes it unlawful.

"A violation openly is not unlawful. Secrecy is the essence of the inquiry. If the commission issues an order against a violator, it will be not to cease and desist from violation of the rule, but to cease and desist from clandestinely violating it.

"When it has been discovered by the commission and they have published the fact to the world, and have produced evidence to sustain it and necessary to furnish the foundation for such order, all of which they must do before taking any steps against it, can it be said that the violation is any longer clandestine? This is the only recorded instance where wrong is changed to a virtue by being found out. Whenever we have facts sufficient to issue an order against one to stop violating a rule clandestinely, has it not already ceased to be a clandestine act?

"Remember the commission has none of the powers of a court to punish. It cannot punish for acts done. It cannot tell a violator what to do. It only has power to stop. Automatically, a violator stops following a practice clandestinely when he is discovered, and we must discover him before we can order him to stop. Of what force and effect is such an order and how can it be violated?"

SPECIFIC GRAVITY OF LIQUEFIED GAS

(Continued from Page 148)

versed and the residual liquid is allowed to blow out through the eduction pipe.

B. Sampling.—The bomb which then contains vapors only is next completely filled by closing the discharge valve and opening the inlet valve. As soon as the bomb gauge registers the pressure of the source of supply, the valves are closed and the apparatus is disconnected. The apparatus is now completely full of liquid at some temperature below 60 degrees Fahrenheit. The determination should be started immediately, since a slight rise in the temperature of the bomb and its contents may increase the pressure sufficiently to disrupt the apparatus.

C. Determinations.—The bomb is submerged in a water bath at 60 degrees Fahrenheit and a pressure approximately 100 pounds higher than the vapor pressure of the product at this temperature is maintained on the bomb at all times, the excess liquid being removed by cracking a valve when occasion requires it. Caution: This operation requires careful attention to prevent bursting of apparatus. (A pressure relief valve is being developed to simplify this part of the operation.) When equilibrium is reached, as is evidenced by no further rise in pressure on prolonged standing, the bomb is removed, is chilled momentarily by submerging in an ice bath and is then thoroughly dried. The weight is then determined to the nearest .001 of a pound.

Care should be taken to avoid error introduced by condensation on bomb of moisture from humid atmosphere during weighing. Density determinations made at 105 degrees Fahrenheit or 130 degrees Fahrenheit are not subject to this source of error. In event any doubt exists regarding the accuracy of the loading density as indicated by the specific gravity determination of 60 degrees Fahrenheit, actual density determinations should be made at the temperature at which it is specified that the liquid portion of the gas should not completely fill the container.

To determine the specific gravity of the liquid, the tare weight is subtracted from the above determined weight and the resultant figure is divided by the water-weight capacity determined in the calibration. Duplicate determinations should yield results that check to 0.0008 or better.

CAMPAIGN URGED AGAINST LEAKAGE

(Continued from Page 64)

so that the proper connection between the pipe and rubber could not be made. With this fact in mind, the ends of the pipe were made smooth by filing or cutting, the rubber rings placed carefully and smoothly on the pipe, the followers were brought against the rubbers evenly and the bolts were tightened evenly. With these precautions for each of the joints, it has been demonstrated that a pipe line can be built so that it has a very low rate of leakage. Recently, construction was finished on over 250 miles of 20-inch combination rubber coupled and welded line; that is, every other joint was connected with rubber couplings. The line was tested for leakage by the closed in pressure drop method of testing and when put into operation, no section showed a leakage of over 40,000 cubic feet per year per mile of 3-inch line at 100 pounds pressure. This shows a reduction of at least 150,000 cubic feet per year per mile of 3-inch line from the reasonable leakage that would have been expected from a pipe line of this construction several years ago. Assuming an average operating pressure of 350 pounds per square inch, the approximate total annual reduction in the reasonable from the line is 150,000 x 20/3 x 350/100 x 250 or 875,000,000 cubic feet. This line represents only one of several lines constructed during the past few years which with improved construction and the more careful precautions during construction shows that the application of leakage reduction is a paying proposition.

It has been found by companies who have been stressing leakage prevention that the actual leakage tests and the data secured from them influence the construction men who are constructing the pipe lines. The tests give concrete data of the actual leakage conditions of a pipe line without any guesswork or assumptions. The construction men naturally desire to have a test show that they have built a tight line, and they strive to have the initial test show a line that is as free of defects as possible. Later tests give data and information that can be used to further decrease the leakage rate.

Many Improvements

Many other improvements in construction and operation during the last few years have influenced the downward trend of the quantity of gas that is lost from transmission lines by leakage. It is now realized that large quantities of gas can escape through a number of small leaks and precautions are taken

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to eliminate such sources of leakage. Drips are welded at as many connections as possible by many companies, and some even take the further precaution of caulking with hot lead any screwed fittings that are necessary. More care is used to install flanges and other connections to pipe lines. All outlet connections which are not being used are bull plugged. The application of control of flow of gas from wells has been initiated. One advantage of such control is that lower line pressures can be maintained for adequate service which in turn means less leakage. The better regulation at town border stations is being studied and developed. Here also one advantage will be the possibility of maintaining lower line pressure.

In Field Lines

The application of leakage reduction and prevention also is being stressed in the construction of field lines. The amount of gas that can be lost due to careless field installation was brought forcibly to the attention of one particular company. A fairly large pipe line had been constructed with precautions taken to eliminate as many sources of leakage as possible and the leakage test showed that the line was in good condition. The field lines then were included in a second leakage test, the pipe lines and the field lines being connected and blanked off by installing a blind disk at the delivery end of the pipe line and blind disks in each of the field lines at the intake ends near the well head. The leakage test showed that the actual leakage was more than doubled. The sources of leakage in the field lines were located and repaired at a comparatively small cost. Although gas in the field lines is not considered to be as valuable as that in transmission lines after it has been compressed several times, the additional cost necessary to save gas in the field is not prohibitive. Several companies are standardizing on welded installations of small field lines, in general, field construction is being bettered by all of the companies.

Correlating Data

The accurate knowledge of leakage condition of pipe lines has helped to analyze many problems of operation, and much study is now being made by several operating companies to correlate the data and information obtained from leakage surveys with the various miscellaneous operating data. For instance, if the true leakage from a pipe line is known, it is possible to trace large items of "unaccounted for" gas back to the meter and correct errors in measurement that are occuring. If the actual leakage were unknown and the measurement seemed correct with only a brief study of it, there would be no basis with which to explain an unusual "loss and unaccounted for" gas item. The correlation of leakage data with various operating data now is developing to the stage where discrepancy reports can be analyzed together with all of the available data and some interesting relations obtained. Also, the leakage tests afford a method of having knowledge of line conditions so that the capacity of pipe lines can be compared with results that should be obtained. The effect of unusual operating conditions such as water troubles, dust accumulation, etc., are exposed and can be corrected. The leakage tests also have afforded an opportunity to obtain many interesting items of information relating to corrosion, electrolysis, location of fittings, etc. A continued study of such information is valuable in securing better and more efficient operation.

Methods of Testing

Different methods are used in testing pipe lines with the closed in pressure drop method. Some companies simply blank off the section of line with blind disks and observe the rate of pressure drop with a recording pressure gauge. The test is continued for a long period of time, preferably for 24 hours, in order to obtain a determination of the pressure drop that is as accurate as possible. However, for very accurate determinations, it has been found necessary to use the dead weight gauge for observing the rate of pressure drop. Also, with this method, it is necessary to continue the test for only a comparatively short period of time. In most cases the dead weight gauge used in a leakage test is made from a dead weight gauge tester by removing the spring gauge connection, and substituting a small reservoir filled with oil through which the pressure is transmitted from the pipe line to the piston on the gauge. Primarily, the instrument only has to consist of a bored cylinder fitted accurately with a ground piston and a reservoir filled with oil. The cylinder and reservoir can be connected with high pressure copper tubing. The weights also can be made, the size being based on the known cross sectional area of the piston. The cylinder, reservoir, and weights can be arranged on one solid base so that the entire measuring apparatus is compact and can be transported easily. This type of construction eliminates such features as screw plungers and spring gauge connections which are ordinarily found on dead weight gauges.

The location of repairable leaks on operating transmission lines still depends to a large extent upon the ability of the line walker. The use of the geophone, leakage indicator, and stenches has been tried but each of them either was unsuccessful or too impractical for use. The most successful method of combating leakage has been to arouse the interest of the field men so that they realized the importance of eliminating leakage and that the repair of small leaks, to a large extent, helped to eliminate this leakage.

An interesting paper recently was written by Charles T. Williams, United Natural Gas Co., Oil City, Pa., and shows some of the results that were obtained by making leakage studies. It is shown that repairs on 117.61 miles of equivalent 3-inch pipe have indicated a saving of 168,149,300 cubic feet of gas per year at the average working pressures. The results of the tests have shown that fewer leaks are created in buried lines than in those exposed to atmospheric conditions; that lines subjected to high pressures or to rapid changes in pressure allowed greater gas loss than low, constant pressure lines; that pressures carried for operation, type of pipe used, quality of pipe used, whether the line is buried or uncovered, and the age of the line are determining factors in studying the relative value of causes of leakage, that a very large saving resulted from welding old screw lines, the cost of welding, in most cases, being more than paid for by gas saved during the first year; and that minor repairs, such as tightening gate stems, etc., have shown a far greater effect on leakage reduction than was suspected to be possible by the field man.

CENTRAL WEST FIELDS

(Continued from Page 59)

tion 4. Top of Berea was found at 1,156 feet and the well was shut down for a period at 1,169 feet and then drilled deeper to from 1,172 to 1,176 feet, where a small gas pay was found.

Morgan County

In Marion Township, Morgan County, the Ohio Fuel Gas Co. has a light gas well at No. 6-3243 on the J. J. Joy, Section 31, from the Berea at from 1,339 to 1,422 feet, total depth 1,427 feet. Pierce and others have a light showing on the A. L. and A. M. Timberman, Section 17, Deerfield Township, at from 1,234 to 1,254 feet. In Penn Township, Henning Brothers have an average gas well in No. 25 on the Ada Harper, Section 2. Gas was found in the lower Berea at from 1,546 to 1,569 feet, and total depth of hole, 1,575 feet. Bauman and others are starting No. 3 on the John P. and C. E. Hileman, Section 14. Ohio Fuel Gas Co. made a location for No. 1-3402 on the Simon Remy, Section 29, Marion Township. Poole Oil and Gas Co. is drilling No. 2 on the Dana Bending, Section 26, and the Penn Contracting Co. is starting a test on the B. G. Horn, Lot 5, same township.

Scattered Pickups

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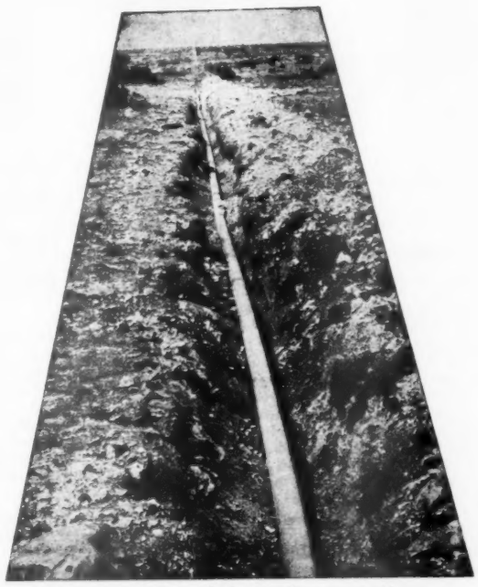

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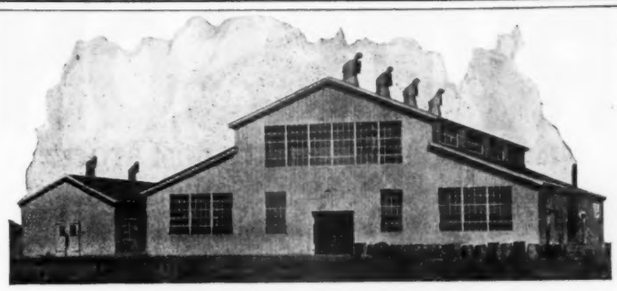

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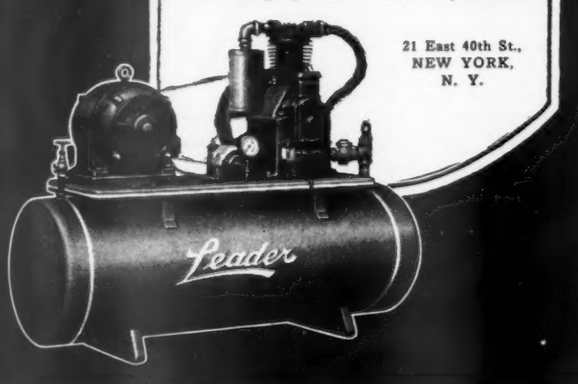

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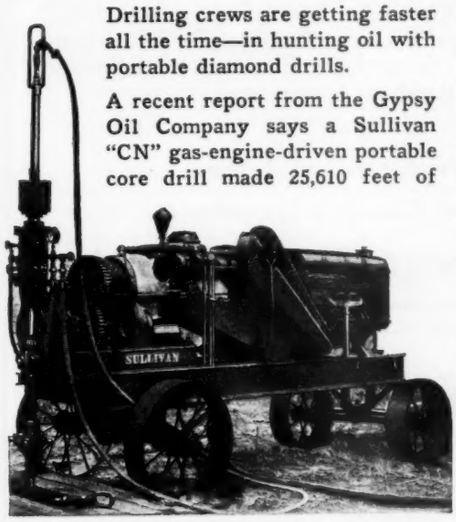

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ship, Ashland County, struck a 5-foot vein of Berea sand, but concluded to drill down to the Clinton. Same company's No. 1-3309 on the Frank Milligan, Section 32, Green Township, same county, struck a light flow of gas in the Newburg sand at 2,400 feet, but is drilling to the Clinton. The Kemrow Co.'s No. 1 Mrs. Marion Glass, Section 23, Vermillion Township, Ashland County, found a volume of about 260,000 feet of gas, but it blew down quickly and the test was abandoned as dry.

In the East Ohio Gas Co.'s test on the Luna Lake Club property, Section 33, Franklin Township, Summitt County, found 24 feet of Red Clinton, with a good gas volume, then drilled through 21 feet of white Clinton, where a heavier volume was found, making it one of the nice gas wells of the week.

Lantz and Meade abandoned their second location on the Roy Baughman farm, Section 16, Jackson Township, Muskingum County.

Indiana

Only one completion was reported from Indiana since the last review and that was a dry hole drilled by the Wiser Oil Co. on the Cord Dooley farm in Spencer County, in the extreme southern part of the State. Salt water was found at a depth of 1,440 feet.

In the old Trenton Field of the northeastern part of the State, in Penn Township, Jay County, the Amber Oil Producing Co. abandoned Nos. 30, 33 and 34 L. Grissell, Section 35, and No. 15 on the J. M. Sutton, Section 21. L. P. Grissell abandoned Nos. 1, 2 and 3 on his own farm.

In Monroe Township, Randolph County, near Parker City, Tharp and DeMoss abandoned Nos. 2, 3 and 4 on the F. E. Keever, Section 4, and No. 1 on the R. B. Cockrell, same section.

In Huntington County, Salamonia Township, 17 wells were abandoned. The Norchester Oil Co. pulled No. 1 Frank Malott, Section 29; No. 1 Calvin Perdue, same section, and No. 1 J. L. Priddy, Section 20. H. B. Wood abandoned Nos. 1 and 2 A. E. Harper, No. 1 Keller, No. 1 Jones, Nos. 1 and 2 Tucker-Miller and Nos. 1, 2, 3 and 4 on the King Large, all in Section 20. The Butler Oil Co. and March Petroleum Co. pulled old Nos. 1, 2 and 4 Amos Schwab, Section 29, and T. A. Darrow did the same with No. 1 on the DeHaven-Neuman, Section 20.

In Stockton Township, Sullivan County, Fletcher, Mosier and others are drilling on the B. A. Rose, Section 3. In Fairbanks Township, Moses McGilvary is drilling on the J. B. Buchamp, Section 15.

James C. Ellis of Owensboro, Ky., and Dr. L. C. Young of Lexington, Ky., have secured a block of 1,806 acres, in Saline County, Illinois, where a well that made a good showing was drilled by Evansville, Ind., parties.

Indiana Oil and Gas News

The following information of oil and gas developments in Indiana were compiled by T. M. Kingsbury, State Gas Supervisor, Department of Conservation, Division of Geology, Indianapolis, Ind., by counties:

Adams County—The Clark D. Stanley No. 3 well, Section 34, Wabash Township, drilled by William Kelley and others, reported an initial production of 6 bbls. Top of Trenton was reached at 996 feet, the same depth as in well No. 1 and well No. 2. No report was received on progress of a well started last month by D. D. and H. O. Jones on the John Clauser farm, north of the Stanley wells, in Blue Creek Township, and adjoining the Tinkham well which was reported to be a good producer and which was completed in September.

Crawford County—Henderson Brothers abandoned their well on the D. W. Jones farm, Section 30, Johnson Township, southeast of Birdseye, after testing two sands, the Corniferous at 1,578 feet and a showing in the Mississippian at 400 feet. The well being drilled on the D. S. Gaither farm, Section 28, Boone Township, just north of Alton, had a showing at 700 feet. Arrangements were being made to test this out according to last reports received.

Gibson County—Several wells are be-

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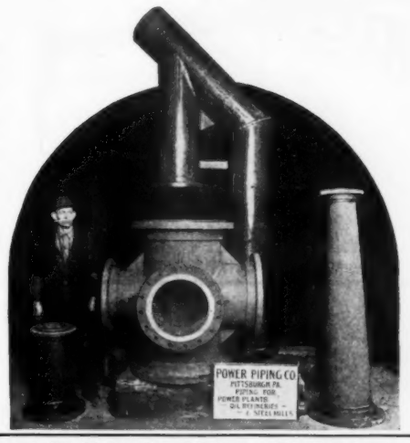

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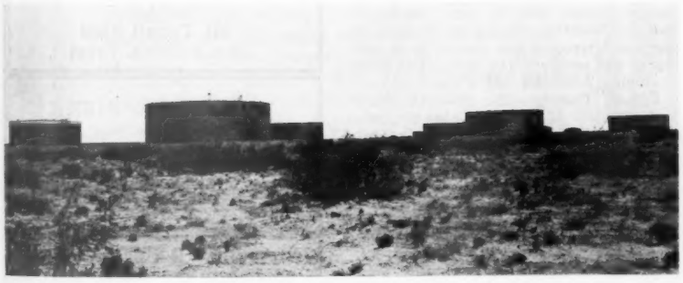

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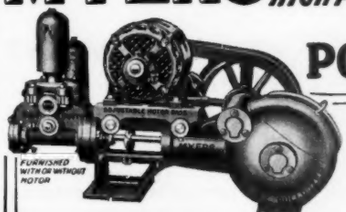

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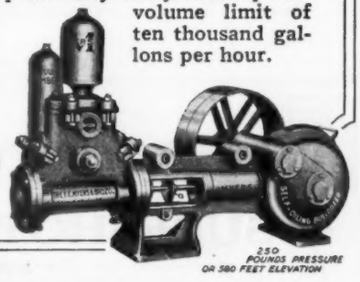

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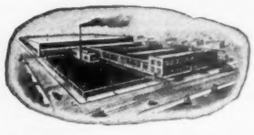

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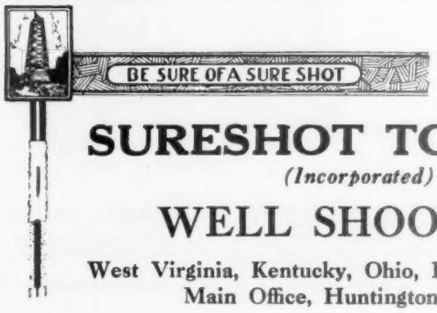

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ing drilled in this county. In Washington Township, Bell Brothers are down 1,525 feet with their Frank Thompson No. 3, Section 1, and 1,808 feet with E. and S. Ewing No. 1, Donation 82; and 1,125 feet with Rudolph Nixon No. 1, Section 1. Their Ira Seifers well, Section 1, made 16 bbls. at 1,601 feet. Mann & Huber are about 1,000 feet down with their well on the Paul White farm, Section 18, and in the same section the Big Four Oil & Gas Co. is drilling at 825 feet on the Kate Sloan farm. In Columbia Township, the Roxana Petroleum Corp. got a dry hole in Manford Corn No. 2 well, Section 15. This company is down 1,350 feet with the V. Wirth well, Section 5, and 1,200 feet with the R. Hollin well, Section 22. The Bement Oil Co. is drilling at 785 feet on the Thomas Bailey farm, Section 34. In Barton Township, the Gem Oil Co. has started No. 2 well on the S. M. and W. S. Ferris farm, Section 5. Bell Brothers got a dry hole on the H. Shumaker farm, Section 17. Randall & Rogers well on the John Williams farm, Section 5, tested 15 bbls. a day after 30 days. In Center Township, Joe Young is underreaming at 1,416 feet his No. 3 well on the W. F. Wilderman farm, Section 31.

Hancock County—Delph and Chew are drilling for gas on the W. S. Ham farm, in the northeastern part of the county.

Jay County—The Oscar Currant well near Red Key recently completed by Dee Wesner is reported to be a good well but production is not known.

Lagrange County—James W. Hunt is still working on his No. 2 well on the Ivo Chrystler farm, northwest of Lagrange. The first well produced gas.

Monroe County—No report has been received from the well started several weeks ago by the Saddle Creek Oil Co. on the John Fox farm, Section 35, Clear Creek Township. It was down about 800 feet, according to last reports.

Pike County's Big Gas Well

Pike County—What is reported to be one of the largest gas wells in Pike County was completed by Bement Gas Co. on the Jasper N. Davidson farm, Lot 12, Clay Township, west of Petersburg. The well is 1,308 feet deep. In Logan Township, H. C. Darby and others, drilling on the Fannie Fowler farm, Section 26, are down 1,361 feet, and Perry Andrews is drilling No. 9 on the A. W. Atkinson farm, but at present the well is down for orders and is 1,350 feet deep. H. C. Darby's No. 2 well on the Russell Kime farm, Section 26, is reported good for 40 bbls. at a depth of 1,380 feet. The test well on the Willehellima Martin farm, Section 33, Lockhart Township, drilled by Hoosier Drilling Co., encountered "blue lick" at 1,166 feet. The August Yeager No. 4 well, Section 9, Monroe Township, drilled by the Gem Oil Corp. and reported last month, is increasing in gas pressure and is reported to be producing 2,000,000 feet a day.

Pulaski County—The Bennett Taylor well, Section 17, Salem Township, west of Francisville, drilled by the Michigan-Indiana Oil & Gas Co., encountered water and was abandoned. Plans are being made to drill another well a mile west of this one.

Rush County—Rushville Gas Co. has completed another gas well east of Carthage.

Spencer County—Wood Oil Co. got a dry hole on the Fred Butler lease, in Huff Township. This well was drilled to a depth of 1,080 feet. Packard Oil Co. completed a well on the Arthur Ray farm, west of Troy, and just northwest of the Lee Carlton well, which is reported good for 25 bbls. and 300,000 feet of gas. It was only 425 feet deep. Several other wells, reported last month, are still uncompleted.

Steuben County—The Peter Snowberger well, in Steuben Township, north of Ashley, was completed at 57 feet in the Trenton and oil stood 150 feet in the hole.

Sullivan County—J. F. Bolinger and others have completed their well on the J. Harris farm, south of the Ohio Oil Co.'s gas well, but amount of production has not been reported. Wyman and Brown are drilling No. 2 on the Tutt Mayfield farm, Section 5, Fairbanks Township. They are down 1,850 feet. Charles Scott and others are having trou-

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and exact conformity to truth in publishing the facts of every branch of the Oil Business has elevated The Oil and Gas Journal to the position of esteem and respect in which it is held by real Oil Men everywhere.

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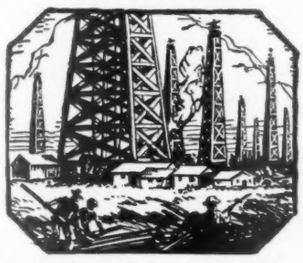

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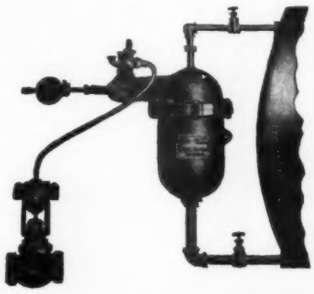

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Specify Champion Drop Forgings for all replacement parts and particularly on all new production equipment.

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ble setting casing in No. 2 on the Scott farm, Section 6, same township. They are down 1,200 feet.

Vanderburg County—The deep test on the George Kraft farm, Section 13, Armstrong Township, being drilled by the Morrison Oil Co. is down 2,183 feet, but drillers have a fishing job. In Section 32, same township, L. A. Martin Co., drilling on the John Wills farm, are down 1,585 feet.

Vigo County—The Siosi Oil Co. has completed No. 18 on the William Riggs lease. Church and others have started No. 3 on the F. E. Shattuck farm, east of the Siosi leases.

Warrick County—The Prairie Oil & Gas Co. has continued drilling on the well started by Kerns and Folsom, on the John Scales farm, west of the Gentryville Pool. In this well there was some gas at 1,250 feet and a showing of oil at 1,302 feet. The new company plans to drill to 3,000 feet if necessary.

Illinois

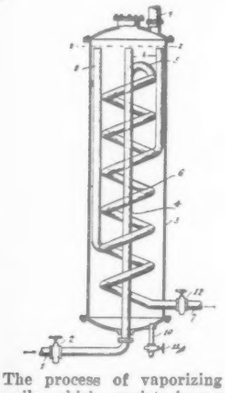
A dry hole is the only completion reported from the Illinois fields of late, and that is a test made by R. G. Holmes and others on the J. Talbot farm, Section 32, Sumpter Township, Cumberland County, which was dry at 600 feet.

In Crawford County, Martin Township, the Dinsmoor Oil Co. is drilling No. 6 M. Thomas farm, Section 34. In Robinson Township, Karns and Schrecongast and others are drilling on the Sam Bailey, Section 16. J. F. Bolinger and others are drilling No. 3 J. P. Evans farm, Section 36, Prairie Township. In Honey Creek Township, R. W. Moore and others are working on the R. Brownfield, Section 18, and W. C. McBridge, Inc., is starting No. 3 on the A. W. Mann, Section 13.

Recent Patents

VAPOR RELEASED AT SEVERAL POINTS

1,676,924. Process and Apparatus for Cracking Oil. Robert T. Pollock, New York, N. Y., assignor to Universal Oil Products Co., Chicago, Ill., a corporation of South Dakota. Filed April 11, 1921. Serial No. 460,525. Renewed March 15, 1928. 3 Claims. (Cl. 196—58.)



1. The process of vaporizing hydrocarbon oils, which consists in passing oil that has been heated in a furnace to a distilling temperature in a restricted stream through a vaporizing zone located outside of the furnace where no rise in temperature of the oil occurs, in releasing vapors from said stream into said zone at different intervals during the travel of oil through said zone in said restricted stream.

OXIDIZING GAS SUPPLIED

1,681,658. Apparatus for Converting Hydrocarbon Oils. Oswald C. Brewster, Casper, Wyo., assignor to Standard Oil Co., Whiting, Ind., a corporation of Indiana. Filed June 20, 1925. Serial No. 38,514. 7 claims. (Cl. 196—104.)

1. In apparatus for the conversion of hydrocarbon oils, a chamber adapted to contain a body of oil, means for heating said body of oil whereby said body of oil is maintained at conversion temperatures, means for conducting vapors away from said chamber, a separate chamber adapted to contain oil, means for passing heated oil from said chamber to said separate chamber whereby the oil in said separate chamber is brought to oxidizing temperature, means for supplying fresh oil to said separate chamber, means for supplying an oxidizing gas in said separate chamber whereby the oil supplied thereto is brought to conversion temperatures, and means for conveying the heated oil from said separate chamber to said oil containing chamber.

CHILL STREAM IN VAPOR PHASE

1,694,262. Process of Converting Hydrocarbons Into Lower-Boiling Products. Frank A. Howard, Elizabeth, N. J., assignor to Standard Oil Development Co., a corporation of Delaware. Filed May 21, 1923. Serial No. 640,491. 2 Claims. (Cl. 196—51.)

A process for the conversion of hydrocarbons into lower boiling products which comprises feeding a stream of light gas oil into a heating passageway at a temperature around 900-1000 degrees Fahrenheit, to effect a material amount of cracking in vaporous condition, then passing the products into a further passageway which is guarded against heat loss, while also introducing a heavy gas oil, contacting said vapor and liquid products together for a substantial period of time and allowing conversion substantially in the liquid phase, to go on in the mixture solely on the heat already acquired, and passing the liquid products together with any vapors, from a point substantially above the bottom of the passageway guarded against heat loss into a vapor-separating zone and separating the lighter hydrocarbons from the heavier.

1,688,830. Process of Cracking Oil. Robert T. Pollock, Boston, Mass., assignor to Universal Oil Products Co., Chicago, Ill., a corporation of South Dakota. Filed December 6, 1920. Serial No. 428,792. Renewed July 16, 1928. 3 Claims. (Cl. 196—48.)

2. A continuous process for cracking hydrocarbon oil, consisting in subjecting the oil to cracking conditions of heat and pressure in a heating zone, in passing the evolved vapors through a dephlegmator wherein they are caused to physically commingle with incoming charging oil and a supply of water, in passing the charging oil, together with the reflux condensate separated from the vapors in said dephlegmator and the unvaporized water to a separator from which the water is withdrawn, in passing mixed reflux condensate and charging oil from said separator to said heating zone, in taking off dephlegmated vapors from said dephlegmator, in condensing such vapors and collecting the resulting distillate.

1,688,861. Process of Cracking Petroleum Oil. Gustav Egloff, Chicago, Ill., assignor to Universal Oil Products Co., Chicago, Ill., a corporation of South Dakota. Filed October 17, 1923. Serial No. 668,980. Renewed May 28, 1928. 2 Claims. (Cl. 196—37.)

1. A process for treating the residuum accumulating in the reaction zone of an oil cracking apparatus, during the conversion of hydrocarbon oil, under heat and pressure, which consists in withdrawing the residuum from such reaction zone in passing the same through a cooling zone, in then delivering the cooled residuum to a tank to at least 50 per cent of its capacity with liquid sulphur dioxide, in violently agitating the residuum and the liquid sulphur dioxide in said tank, in then ceasing the agitation and permitting the residuum constituents and sulphur dioxide to stratify in upper and lower layers, in separately drawing off the constituents from said upper and lower layers, and in subjecting the separately withdrawn constituents to independent chemical treatments, to obtain lubricating stock from the upper stratum and cylinder stock from the lower stratum.

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OKLAHOMA-KANSAS

Pipe Line Statement for October Runs

Company—	Month bbls.	Dly. av. bbls.
*Prairie P. L. Co.	4,650,000	150,000
Gulf P. L. Co.	1,718,381	55,431
Texas P. L. Co.	908,178	29,296
Magnolia P. L. Co.	2,340,076	75,486
Empire P. L. Co.	1,247,384	40,254
Cosden P. L. Co.	895,409	28,884
Sinclair P. L. Co.	3,518,500	113,500
Oklahoma P. L. Co.	3,549,012	114,484
Other lines	7,672,500	247,500
Total October	26,499,940	854,835
Total September	25,508,355	850,279
Difference	991,585	4,556

Shipments

†Prairie P. L. Co.	6,254,380	201,754
Gulf P. L. Co.	1,644,809	53,055
Texas P. L. Co.	901,058	29,066
Magnolia Pet. Co.	2,005,843	64,705
Empire P. L. Co.	1,223,043	39,453
Cosden P. L. Co.	849,653	27,408
†Sinclair P. L. Co.	3,427,350	110,560
Oklahoma P. L. Co.	3,432,767	110,734
Other lines	7,595,000	245,000
Total October	27,333,903	881,735
Total September	26,460,656	882,021
Difference	873,247	286

Stocks

	Bbls.
Prairie O. & G. Co.	31,952,000
Prairie P. L. Co.	2,250,000
Gulf P. L. Co. and Gypsy Oil Co.	10,206,411
The Texas Company	6,871,289
Magnolia Pet. Co.	9,136,351
Empire P. L. Co.	3,674,491
Mid-Continent Pet. Corp.	3,564,997
Sinclair Crude Oil Pur. Co.	20,465,000
Carter Oil Co.	12,228,725
Oklahoma P. L. Co.	3,151,537
Other lines	11,700,000
Total October	115,173,801
Total September	113,392,812
Difference	1,780,989

*Estimated. †Prairie P. L. shipments include Texas crude oil, and Sinclair shipments include Texas and Wyoming crude oil.

Note—Stocks do not include approximately 8,300,000 bbls. of crude oil held in storage on private tank farms and leases and approximately 200,000 bbls. of Texas Panhandle crude oil in storage in Oklahoma.

EASTERN PIPE LINE REPORT

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for October and November:

	Oct.'28	Nov.'28
Nat. Transit	172,463.66	149,632.58
S. W. Pa. P. L.	94,478.66	88,351.54
Eureka P. L.	400,695.98	340,150.08
Buckeye P. L. (Macksburg)	363,769.46	324,323.38
Buckeye P. L. (Cleveland)	13,134.12	9,969.20
Buckeye P. L. (Lima, etc.)	119,271.80	95,741.92
Indiana P. L.	7,592.34	5,045.26
Cumberland P. L.	217,927.04	200,252.32
N. Y. Transit	26,945.74	26,696.56
Tidewater P. L.	223,123.30	213,822.88
Pure Oil	64,772.84	63,222.62
Emery P. L.	62,569.80	59,916.74
Paragon Dev.	24,640.17	21,545.52
Stoll Oil Ref.	9,609.59	8,888.44
Total	1,800,994.50	1,606,958.54
Daily average	58,099.79	53,565.15

Note—Indian Refining Co. also reported other receipts of 367,515.15 bbls. Paragon Refining Co. had other receipts of 159,377.75 bbls. Paragon Development had other receipts of 479.18 bbls.

Petroleum Deliveries

The following table exhibits the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, Wst Virginia, Ohio, Kentucky at the close of October and November:

	Oct.'28	Nov.'28
Nat. Transit	528,778.26	581,552.73
S. W. Pa. P. L.	491,708.37	453,248.05
Eureka P. L.	228,824.47	233,597.31
Buckeye P. L. (Macksburg)	139,624.01	104,175.67
Buckeye P. L. (Cleveland)	2,425.85	1,942.42
Buckeye P. L. (Lima, etc.)	1,424,886.12	1,432,776.49
Indiana P. L.	1,426,003.87	1,380,185.20
Cumberland P. L.	221,498.45	182,624.70
N. Y. Transit	278,273.65	232,023.71
Northern P. L.	130,832.45	240,489.16
Tidewater P. L.	183,550.90	181,613.37
Pure Oil	109,074.40	63,566.49
Emery P. L.	59,853.71	59,688.23
Paragon Ref.	203,968.74	159,377.75
Paragon Dev.	26,688.69	.....
Total	5,455,991.94	5,306,941.28
Daily average	175,999.74	176,898.04

Indian Refining Co. reported other deliveries of 292,984.68 bbls.

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky for October and November:

	Oct.'28	Nov.'28
Nat. Transit	971,530.85	937,788.09
S. W. Pa. P. L.	674,433.72	548,202.29
Eureka P. L.	1,049,306.93	1,119,157.14
Buckeye P. L. (Macksburg)	496,344.46	565,202.83
Buckeye P. L. (Cleveland)	41,427.01	29,807.45
Buckeye P. L. (Lima, etc.)	3,428,238.49	2,745,636.88
Indiana P. L.	591,505.91	542,471.12
Cumberland P. L.	504,787.65	520,634.29
Southern P. L.	433,685.28	374,083.37
N. Y. Transit	494,456.24	403,009.35
Northern P. L.	429,822.34	381,904.17
Pure Oil	14,039.00	14,711.72
Emery P. L.	11,502.07	12,163.12
Paragon Ref.	15,313.80	22,375.49
Indian Ref.	66,957.25	142,492.29
Paragon Dev.	6,347.21	6,413.78
Total	9,229,709.11	8,366,553.38
Decrease	431,201.28	863,155.73

Grades of Oil

The following table shows the amount of the different grades of oil held by the east-pipe lines at the close of October and November, showing the gross stocks of the above fields:

	Oct.'28	Nov.'28
Pennsylvania	3,121,156.66	3,045,588.44
Lima	977,037.03	793,424.06
Kentucky	799,724.03	767,197.74
Mid-Continent	4,278,220.12	3,605,501.13
Illinois	53,571.27	154,842.01
Total	9,229,709.11	8,366,553.38

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1925	1926	1927	1928
Jan.	56,831	55,630	56,209	52,904
Feb.	60,606	60,394	61,298	57,002
Mar.	60,575	61,644	63,247	57,485
April	63,062	63,019	60,337	56,812
May	59,217	60,580	60,284	62,067
June	61,270	61,131	62,757	58,220
July	62,639	63,206	58,674	57,144
Aug.	69,686	61,815	60,870	57,745
Sept.	62,510	64,639	60,285	53,437
Oct.	145,388	161,132	147,030	58,100
Nov.	59,350	61,774	57,275	53,565
Dec.	57,974	58,756	53,089	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1925	1926	1927	1928
Jan.	157,889	155,056	141,227	146,465
Feb.	160,863	159,488	138,534	167,368
Mar.	154,591	150,239	133,777	158,883
April	151,429	152,371	140,527	172,935
May	146,995	160,998	144,594	180,559
June	149,467	160,257	149,772	188,034
July	161,338	160,045	151,850	189,470
Aug.	161,730	151,939	188,653	192,852
Sept.	156,719	158,915	144,213	194,138
Oct.	145,388	161,132	147,036	176,000
Nov.	143,582	152,608	150,976	176,898
Dec.	150,162	136,428	144,504	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields including oil received from other lines at the close of each month for the past three years:

	1926	1927	1928
Jan.	9,859,170	9,718,008	12,276,71
Feb.	9,579,354	10,119,162	12,180,41
Mar.	9,438,292	10,794,044	12,239,73
April	9,805,851	11,112,295	11,740,12
May	9,531,757	11,359,381	11,602,46
June	9,585,904	11,493,673	11,287,67
July	9,734,687	11,458,128	10,819,32
Aug.	9,068,947	11,989,115	10,236,76
Sept.	9,436,732	12,212,716	9,666,91
Oct.	9,269,806	12,047,661	9,229,70
Nov.	9,257,067	11,939,740	8,366,55
Dec.	9,454,512	12,340,297	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and as counted in the stocks and averages reported above:

	Runs	Shipments	Stocks
1927—			
Nov.	2,746.50	2,220.53	31,471.5
Dec.	2,779.86	1,893.69	22,356.7
1928—			
Jan.	1,886.06	2,424.79	21,818.9
Feb.	2,460.14	3,109.34	21,170.7
Mar.	2,578.86	3,540.33	20,209.2
June	3,153.08	2,779.02	17,922.5
July	2,902.50	3,628.02	17,197.0
Aug.	2,874.11	2,350.13	17,721.6
Sept.	2,820.31	5,255.42	15,286.5
Oct.	1,289.93	538.89	17,551.5
Nov.	2,663.53	783.47	19,436.1

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Dec.1	2,069,949.1
Runs from wells	549,844.4
Other receipts	475,152.1
Regular deliveries	628,747.5
Other deliveries	440,266.4

The amount of Illinois oil run by the Tidewater Pipe Co. in November was 28,488.44 bbls. Deliveries were 73,842.24 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

	Runs	Deliveries
1927—		
November	605,621.14	415,188.6
December	577,321.25	397,176.0
1928—		
January	561,759.57	434,147.0
February	573,619.78	450,217.1
March	725,250.82	520,696.0
April	526,013.13	448,282.4
May	632,968.64	522,998.0
June	608,552.49	625,087.1
July	612,286.49	565,678.5
August	639,074.85	671,864.4
September	570,307.91	737,293.1
October	626,147.64	626,290.4
November	576,332.88	702,589.5

Tidewater Pipe Co., Ltd., also delivered in September 261,905.21 bbls. Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF COAST PORTS

Average bbls. per day—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total all ports
May	19,355	5,387	19,581	16,419	4,774	65,516	.....	.....	.....	.....	.....	65,5
June	11,800	.....	23,367	19,700	9,000	63,867	.....	.....	.....	.....	.....	63,8
July	19,807	2,903	8,774	20,419	2,452	54,355	.....	.....	.....	.....	.....	54,3
August	18,161	3,613	27,774	17,677	2,419	69,645	.....	.....	.....	.....	806	70,4
September	11,100	.....	18,967	38,200	6,700	74,967	.....	.....	.....	.....	.....	74,9
October	17,323	.....	11,807	6,483	.....	.....	.....	.....	.....	.....	.....	35,6

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total all ports
May	28,000	7,033	107,484	32,129	21,936	196,581	3,871	24,032	.....	1,904	29,807	226,3
June	24,900	12,233	119,867	41,667	19,300	217,967	1,833	16,567	2,167	.....	19,567	237,5
July	23,484	14,548	111,903	37,678	21,452	209,065	9,355	25,000	.....	774	35,129	244,1
August	25,290	16,323	122,226	31,613	7,194	192,646	.....	38,677	.....	613	39,290	231,9
September	22,933	19,100	110,467	30,700	14,333	197,533	6,667	41,200	6,333	1,667	55,867	253,3
October	20,161	16,839	128,452	27,710	7,098	200,253	.....	32,226	3,065	1,612	36,903	237,1

GROSS PRODUCTION IN UNITED STATES FOR 12 MONTHS

(In barrels of 42 gallons)

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mountains	Eastern Fields	Total
November:	Month	18,516,467	23,083,380	18,628,290	3,313,650	2,906,760	1,956,960	3,234,720	3,302,500	73,943,7
	Daily average	617,216	769,446	620,943	110,455	96,892	65,232	74,491	110,083	2,464,9
December:	Month	18,938,823	22,208,417	19,840,009	3,427,174	2,962,750	1,927,148	3,400,578	3,219,900	74,924,8
	Daily average	610,930	716,400	640,000	110,554	95,576	62,166	77,428	103,868	2,417,8
January:	Month	19,013,228	20,972,350	20,024,981	3,319,326	2,791,922	1,808,015	3,439,375	3,133,000	74,501,8
	Daily average	613,314	676,720	645,967	107,075	90,061	58,226	75,367	101,064	2,371,2
February:	Month	18,038,459	19,294,426	19,645,488	3,079,887	2,571,575	1,759,606	3,230,887	3,166,000	69,786,3
	Daily average	622,016	665,324	677,431	106,203	88,675	60,676	76,927	109,172	2,406,4
March:	Month	19,118,320	20,162,524	21,466,632	3,379,031	2,687,948	1,871,158	3,401,911	3,522,000	74,609,5
	Daily average	616,720	650,404	692,472	109,001	86,708	60,360	77,481	113,613	2,406,7
April:	Month	18,280,729	19,096,920	21,845,428	3,412,260	2,472,600	1,918,020	3,370,510	3,231,000	73,626,9
	Daily average	609,357	636,564	728,180	113,742	82,420	63,934	79,027	107,700	2,454,5
May:	Month	19,331,866	19,443,365	21,191,561	3,367,809	2,542,847	1,926,036	3,525,043	3,619,000	74,345,5
	Daily average	623,609	627,205	683,599	108,639	91,787	62,130	81,455	116,742	2,396,1
June:	Month	19,164,244	18,482,981	19,802,520	3,202,050	2,075,911	2,112,149	3,425,470	3,394,000	71,660,3
	Daily average	638,808	616,099	660,084	106,735	102,530	70,405	80,849	113,133	2,388,6
July:	Month	19,754,458	18,809,498	22,155,335	3,171,548	2,792,139	2,237,738	3,492,586	3,472,000	74,885,3
	Daily average	637,241	606,758	714,688	102,308	90,069	72,185	80,406	112,000	2,415,8
August:	Month	19,444,849	20,840,494	22,201,257	3,147,055	2,711,787	2,221,677	3,561,840	3,571,200	76,700,3
	Daily average	627,255	672,274	716,170	101,518	87,477	71,667	82,640	115,200	2,474,2
September:	Month	18,908,169	22,456,860	21,554,260	3,047,280	2,540,070	1,829,626	3,432,430	3,420,000	76,188,6
	Daily average	630,272	748,562	718,475	101,575	84,669	60,987	81,081	114,000	2,538,6
October:	Month	19,430,992	23,431,071	21,522,029	3,058,660	2,652,484	1,836,192	2,571,822	3,612,000	76,115,3
	Daily average	626,806	755,841	694,259	98,660	85,564	59,232	82,962	116,516	2,519,8
	Total 12 months	227,955,654	248,288,246	249,877,790	38,925,702	33,009,793	22,398,326	29,077,482	40,662,600	891,195,5
	Daily average	622,829	678,383	682,726	106,354	90,191	63,930	79,447	111,100	2,434,9

Easy Running!

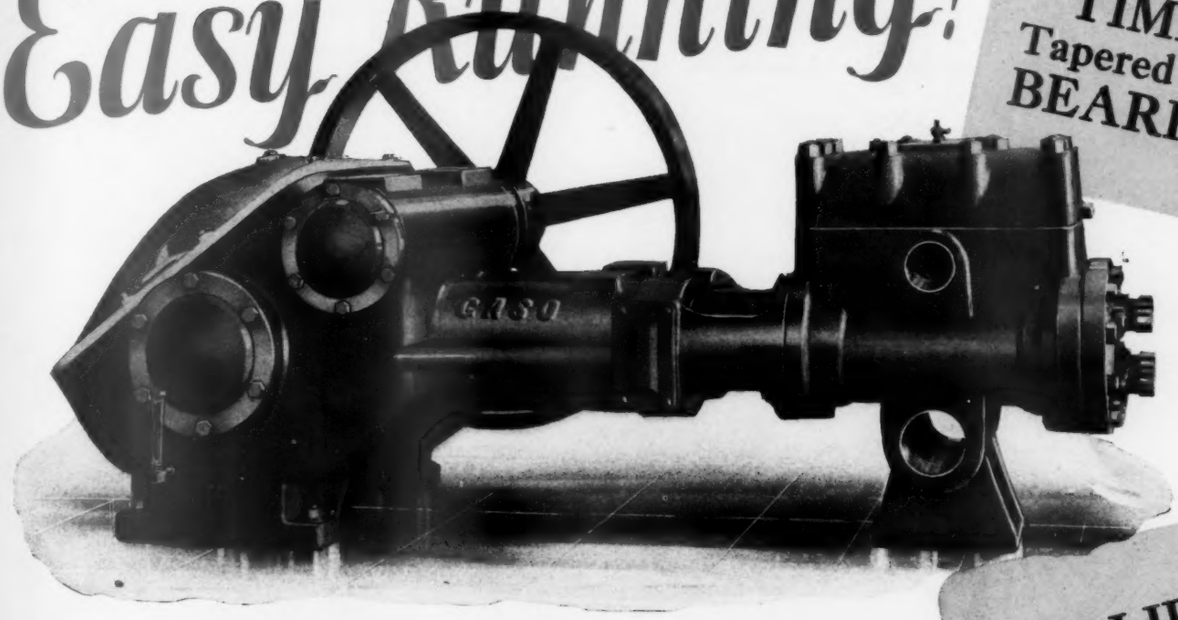

Figure 1508

TIMKEN Tapered Roller BEARINGS

SOLID HERRINGBONE GEAR

COMPLETELY ENCLOSED CRANK CASE

WORKING PARTS RUN IN AN OIL BATH

Absence of Friction Insures Long Life for this Gaso Pump

This Gaso Figure 1508 general service type pump is a machine of such fine design and manufacture that friction and wear have been eliminated to a truly remarkable degree. As a result, the maximum amount of power is turned into useful work, and maximum length of service is insured.

Enclosed crank case, with automatic lubrication—Timken Tapered Roller pinion and main bearings—gear of solid Herringbone construction, mounted in center on steel crank shaft—a double stuffing box arrangement between the power and fluid ends, which positively protects the oil reservoir from seeping water—are features of interest in the efficiency and durability of this pump.

Gaso Pump, Figure 1508, designed for pressures ranging from 250 to 800 pounds, is arranged for any type of drive—(1) pulley for belt drive, (2) direct connected to engine through flexible coupling, (3) motor, through silent chain or reduction gears, and (4) "V" rope drive. Investigate by letter, wire or phone.

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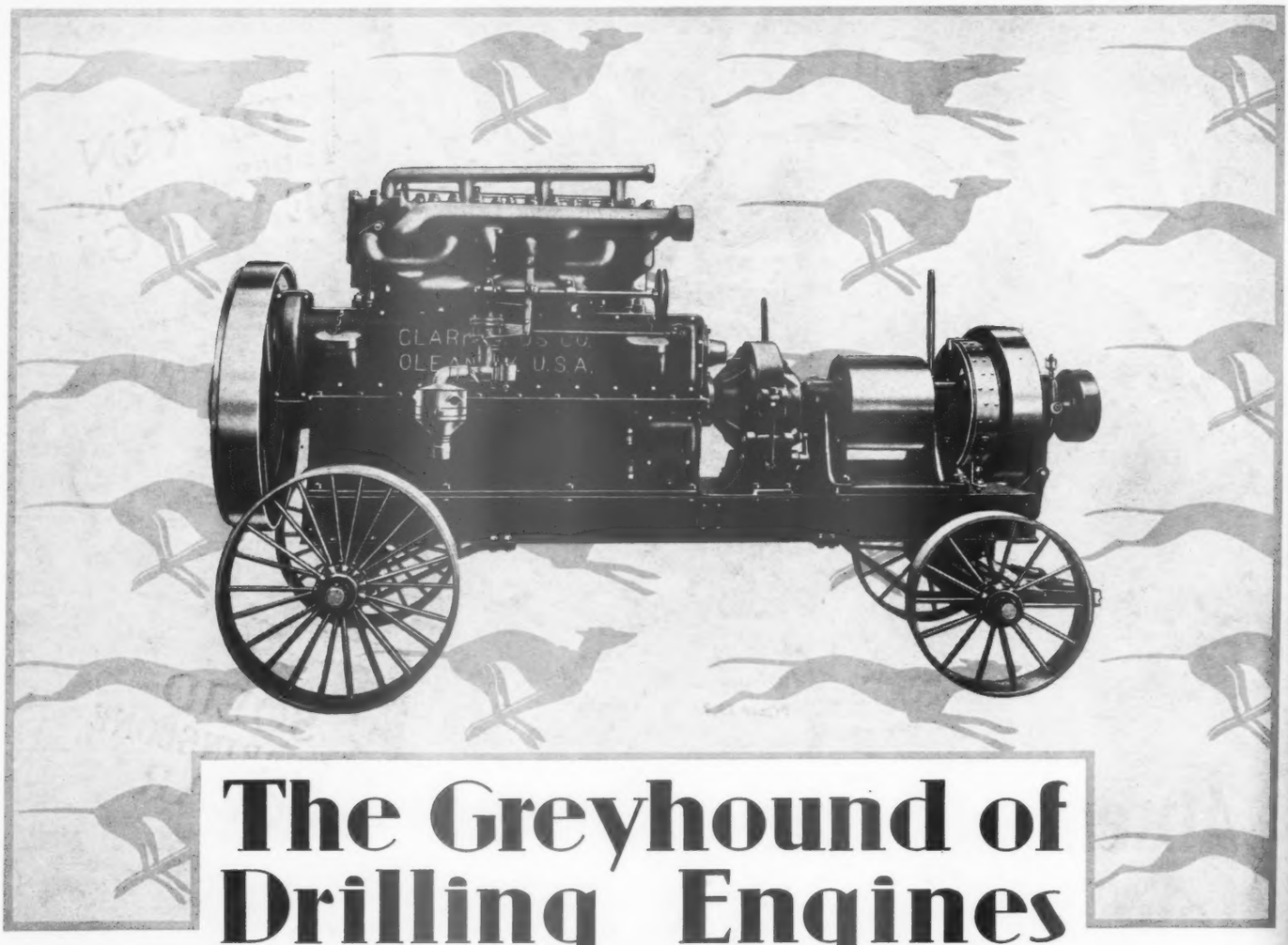

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